K. Cl
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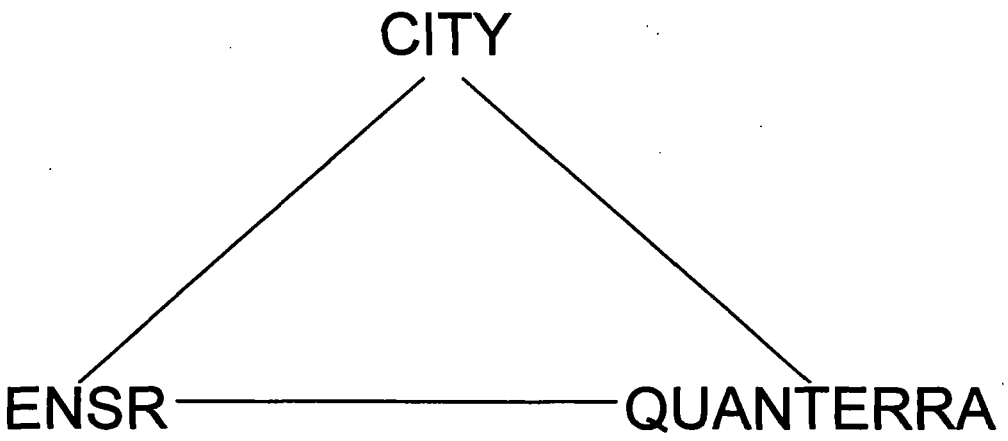
ANNUAL PERFORMANCE REPORT
GRANULAR ACTIVATED CARBON TREATMENT SYSTEM
FOR 1998

REILLY TAR & CHEMICAL CORP.
N.P.L. SITE
ST. LOUIS PARK, MINNESOTA

SUBMITTED MARCH 15, 1999



CITY OF ST. LOUIS PARK

UTILITY OPERATIONS

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

March 15, 1999

Regional Administrator
United States Environmental
Protection Agency, Region 5
ATTN: Darryl Owens
Mail Code HSR-6J
77 West Jackson Boulevard
Chicago, Illinois 60604

Director, Groundwater and Solid
Waste Division
Minnesota Pollution Control Agency
ATTN: Site Response Section
520 Lafayette Road North
ST. Paul, Minnesota 55155

President
Reilly Industries, Inc.
300 N. Meridian #1500
Indianapolis, Indiana 46204

Commissioner
Minnesota Department of Health
121 E. Seventh Place
P.O. Box 64975
St. Paul, MN 55164-0975

RE: United States of America, et al. vs Reilly Tar &
Chemical Corporation, et al.
File No. Civ. 4-80-469
CD-RAP 4.3.5

Gentleman:

Enclosed is the 1998 annual performance report of the Granular Activated Carbon treatment system submitted pursuant to Section 4.3.5. of the Consent Decree-Remedial Action Plan in the above captioned matter. This report is issued by the City in accordance with Section 2(a) of the Reilly/St. Louis Park Agreement (Exhibit B to the Consent Decree).

Sincerely,

Scott E. Anderson
Superintendent of Utilities

enclosure
SEA/pmm
cc: William Gregg (w/ enclosures)
Tom Scott (w/o enclosures)
Reilly File
RAP/anrapgac

3752 Wooddale Avenue St. Louis Park, Minnesota 55416-2216
Phone: 612-924-2558 Fax: 612-924-2570

ANNUAL PERFORMANCE REPORT
FOR
GRANULAR ACTIVATED CARBON
TREATMENT SYSTEM - 1998

Operation:

The City operated the Granular Activated Carbon (GAC) treatment system in substantial compliance with Section 4.2 of the Remedial Action Plan (RAP) during 1998, treating 337.602 million gallons (mg) of water pumped from well SLP 10.

The results from the April sample of the GAC treated water indicated the total of other PAH's to be 76 ppt, well below the Drinking Water Advisory Level (175 ppt). The level had increased from 24 ppt in October of 1997. The past performance of the GAC indicated the GAC would experience breakthrough sometime during the winter months. Due to the difficulties of a winter change out an early change out of the GAC was scheduled for September. The early change out also assures the uninterupted supply of water which meets the quality standards established in the CD-RAP. The GAC change out was completed and the compliance sample was taken.

The annual monthly pumpages are shown in Table 1 which confirms the City was in substantial compliance with RAP Section 4.2.1 (i.e. a minimum of 200 mg must be pumped from SLP 10/15 annually and 10 mg must be pumped monthly).

Monitoring:

The 1998 monitoring program was jointly conducted by the City and Quanterra Environmental Services (Quanterra). The City retrieved all samples and Quanterra was responsible for analytical services. Laboratory analyses were conducted at the Quanterra laboratory in Arvada, Colorado.

The 1998 monitoring schedule (Table 2), as established in the 1998 Sampling Plan developed in accordance with the requirements of Section 3.3 of the RAP, provided for quarterly monitoring of the treatment system effluent and annual monitoring of the treatment system feed water, acid fraction analysis and extended PAH compounds. All samples were collected an analyzed in compliance with the CD-RAP. The acid fraction analysis was not completed in 1998. A summary of the 1998 GAC treatment system monitoring is shown in Table 3. **All monitoring results indicate the GAC treatment system operated in compliance with the Drinking Water Criteria established in CD-RAP Section 2.2.**

ADDITIONAL INFORMATION

The CD-RAP provides the operational criteria for the GAC facility located adjacent to Water Treatment Plant No. 1, located at 2936 Idaho Avenue (GAC-1) which treats water produced by municipal wells SLP 10 and SLP 15. The City constructed an additional GAC facility in 1994 located at 4701 West 41st Street (GAC-4) which treats water from municipal well SLP 4. This GAC facility is not referenced in the CD-RAP.

The City operates the GAC-4 facility within the Drinking Water Criteria established in Section 2.2. The facility is operated on a continuous pumping schedule as directed by the United States Environmental Protection Agency and the Minnesota Pollution Control Agency. The system is operated in a series of two sets of two GAC vessels. The lead units are referred to in the sample analysis as GAC-SLP4TLE. Samples are taken at the effluent of the lead vessels for operational purposes. When the sample results of the lead vessels exceed the Drinking Water Criteria the GAC is changed out.

The results of the facility effluent are included in Table 3 of this report.

The GAC-4 facility treated 447.973 million gallons of water in 1998. The annual monthly pumpages are shown in Table 4.

CITY OF ST. LOUIS PARK
GRANUALAR ACTIVATED CARBON
TREATMENT PLANT GAC 1

1998 PRODUCTION

January	35.910
February	11.714
March	19.637
April	21.466
May	27.911
June	17.606
July	37.220
August	36.262
September	34.199
October	26.185
November	31.795
December	37.697
TOTAL ANNUAL PUMPAGE	**337.602**

Table 1

1998 Sampling Plan
GAC Treatment System Monitoring Schedule

RAP Section	Sampling Points	Start of Monitoring	Sample Frequency	Analyses
4.3.1(C)	Treated Water (TRTD)	Date of plan approval	Quarterly	PAH (ppt)
4.3.3(D)	Feed Water (FEED)	Date of plan approval	Annually	PAH (ppt)
4.3.4	Treated Water	Date of plan approval	Annually	Extended PAh (ppt)
4.3.4	Treated or Feed Water	Date of plan approval	Annually	Acid Fraction compounds in EPA Test Method 625

All PAH samples are of the extended list

Table 2

GAC PLANT		SLP4T	SLP4T	SLP4T	SLP4T		SLP10T	SLP10T	SLP10T	SLP10T
DATE		2/10/98	4/28/98	9/28/98	11/3/98		2/10/98	4/28/98	9/28/98	11/3/98
2,3-Benzofuran										
2,3-Dihydroindene				11	20		N	20	1	2
1H-Indene					1		O			
Naphthalene				1	3		T		2	2
Benzo (b) Thiophene					3			2		
1H-Indole					1					
2-Methylnaphthalene				2	3		A		1	2
1-Methylnaphthalene				1	2		V		1	1
Biphenyl					20		A			6
Acenaphthylene					1		I	6		1
Acenaphthene				11	20		L	28	3	6
Dibenzofuran		1			1		A	1	1	1
Fluorene		1			1		B	8	2	4
Dibenzothiophene					1		L	1		1
Phenanthrene		6	2	3	6		E	2	3	4
Anthracene					1					1
Acridine					3					3
Carbazole				2	3					
Fluoranthene		4		2	3			3	2	3
Pyrene		3		1	3			5	1	3
12-Dimethylbenz(a)anthracene										
Benzo (e) Pyrene										
Perylene										
3-Methylcholanthrene										
Dibenz (A,C) Anthracene										
Quinoline	C	0	0	0	2			0	0	1
Benzo (a) Anthracene	C	0	0	0	0			0	0	0
Chrysene	C	0	0	0	0			0	0	0
Benzo (b) Fluoranthene	C	0	0	0	0			0	0	0
Benzo (k) Fluoranthene	C	0	0	0	0			0	0	0
Benzo (a) Pyrene	C	0	0	0	0			0	0	0
Indino (1,2,3-cd) Pyrene	C	0	0	0	0			0	0	0
Dibenz (a,h) Anthracene	C	0	0	0	0			0	0	0
Benzo (g,h,i) Perylene	C	0	0	0	0			0	0	0
TOTAL OTHER PAH		15	2	34	96			76	17	40
BENO(a)PYRENE + DIBENZO(A,H)	**C**	0	0	0	0			0	0	0
TOTAL CARCINOGEN	C	0	0	0	2			0	0	1
TOTAL PAH		15	2	34	98			76	17	41
Dilution Factor		1	1	1	1			1	1	1
Surrogate Recoveries										
Naphthalene-d8		94	60	34	47			46	32	35
Fluorene-d10		91	77	58	86			59	61	79
Chrysene-d12		31	42	54	63			44	57	51

GAC PLANT	GAC FEED		SLP4F	SLP10F
DATE			4/28/98	4/28/98
2,3-Benzofuran				
2,3-Dihydroindene			160	290
1H-Indene			7	12
Naphthalene				
Benzo (b) Thiophene			27	50
1H-Indole				
2-Methylnaphthalene				
1-Methylnaphthalene				
Biphenyl				
Acenaphthylene				130
Acenaphthene			160	590
Dibenzofuran				34
Fluorene				200
Dibenzothiophene				29
Phenanthrene				
Anthracene				
Acridine				
Carbazole			22	
Fluoranthene				47
Pyrene			10	79
12-Dimethylbenz(a)anthracene				
Benzo (e) Pyrene				
Perylene				
3-Methylcholanthrene				
Dibenz (A,C) Anthracene				
Quinoline				
Benzo (a) Anthracene				
Chrysene				
Benzo (b) Fluoranthene				
Benzo (k) Fluoranthene				
Benzo (a) Pyrene				
Indino (1,2,3-cd) Pyrene				
Dibenz (a,h) Anthracene				
Benzo (g,h,i) Perylene				
TOTAL OTHER PAH			386	1461
BENO(a)PYRENE + DIBENZO(A,H)			0	0
TOTAL CARCINOGEN			0	0
TOTAL PAH			386	1461
Dilution Factor			4	10
Surrogate Recoveries				
Naphthalene-d8			69	NC
Fluorene-d10			69	NC
Chrysene-d12			56	NC

CITY OF ST. LOUIS PARK
GRANUALAR ACTIVATED CARBON
TREATMENT PLANT GAC 4

1998 PRODUCTION

January	42.317
February	19.915
March	24.964
April	23.324
May	40.854
June	41.775
July	43.693
August	38.873
September	44.787
October	43.057
November	41.635
December	42.779
TOTAL ANNUAL PUMPAGE	**447.973**

Table 4

SECOND QUARTER MONITORING

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

Quanterra
Environmental Services

April 28, 1998

Mr. Scott E. Anderson
Superintendent of Utilities
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Scott:

Enclosed is the report for 3 aqueous samples received at Quanterra Environmental Services, Denver on February 11, 1998. Included with the report is a quality control summary. Please call if you have any questions.

Sincerely,

Lindsay Breyer
Program Manager

Enclosures

Quanterra #059068

Quanterra
Environmental
Services

ANALYTICAL RESULTS

FOR

CITY OF ST. LOUIS PARK

QUANTERRA NO. 059068

APRIL 28, 1998

Prepared by: _____

Lindsay Breyer

Quanterra
Environmental Services

Table Of Contents

Standard Deliverables With Supporting Documentation

Quanterra
Environmental Services

NARRATIVE

On February 11, 1998, Quanterra Environmental Services, Denver received 3 aqueous samples from the City of St. Louis Park.

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data.

General Comments

Dilution factors listed on the data sheets for the aqueous semivolatile organic parameters are based on the volume of sample actually extracted relative to the nominal volume of 1.0 liter. Any additional dilutions performed on the samples after extraction are also included in the dilution factor. All results and reporting limits are adjusted relative to the sample volume extracted and any subsequent dilutions performed. Dilution factors are rounded to two significant figures for reporting; all calculations are performed before rounding.

GC/MS Semivolatile Organics

In the initial analysis of the samples, several analytes were detected above the reporting limit in the method blank. The concentration of phenanthrene exceeded the limits for the method blank specified in the 1998 Sampling Plan. In addition, the recoveries of fluorene in the LCS and quinoline and flurene matrix spike/matrix spike duplicate also exceeded control limits. Benzo(e)pyrene was not recovered in the matrix spike/matrix spike duplicate; matrix interference is suspected. The samples were therefore re-extracted and re-analyzed. New samples were logged (059068-0011 through –0013) so that both sets of data could be reported. Since only 2 liteers of each sample remained for analysis, the final extract volumes were reduced by half and spike amounts were adjusted in order to compensate. The re-extraction took place after the holding time had expired.

In the second analysis, the method blank and LCS were within control limits for all compounds. Recoveries of all compounds except benzo(e)pyrene were within control limits for the matrix spike and matrix spike duplicate. The RPD for chrysene was slightly outside control limits. Matrix effects are suspected.

Quanterra
Environmental Services

With the exceptions noted above, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory QC samples analyzed in conjunction with the samples in this project were within established control limits.

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION/ANALYTICAL TEST REQUESTS

Sample Description Information

The Sample Description Information lists all of the samples received in this project together with the internal laboratory identification number assigned for each sample. Each project received at Quanterra's Denver laboratory is assigned a unique six digit number. Samples within the project are numbered sequentially. The laboratory identification number is a combination of the six digit project code and the sample sequence number.

Also given in the Sample Description Information is the Sample Type (matrix), Date of Sampling (if known) and Date of Receipt at the laboratory.

Analytical Test Requests

The Analytical Test Requests lists the analyses that were performed on each sample. The Custom Test column indicates where tests have been modified to conform to the specific requirements of this project.

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
059068-0001-FB	GAC-SLP4TFB-021098	AQUEOUS	10 FEB 98		11 FEB 98
059068-0001-FD	GAC-SLP4TFBD-021098	AQUEOUS	10 FEB 98		11 FEB 98
059068-0002-SA	GAC-SLP4TLE-021098	AQUEOUS	10 FEB 98		11 FEB 98
059068-0003-SA	GAC-SLP4T-021098	AQUEOUS	10 FEB 98		11 FEB 98
059068-0003-FD	GAC-SLP4TD-021098	AQUEOUS	10 FEB 98		11 FEB 98
059068-0003-MS	GAC-SLP4TMS-021098	AQUEOUS	10 FEB 98		11 FEB 98
059068-0003-SD	GAC-SLP4TMSD-021098	AQUEOUS	10 FEB 98		11 FEB 98
059068-0011-FB	GAC-SLP4TFB-021098	AQUEOUS	10 FEB 98		11 FEB 98
059068-0011-FD	GAC-SLP4TFBD-021098	AQUEOUS	10 FEB 98		11 FEB 98
059068-0012-SA	GAC-SLP4TLE-021098	AQUEOUS	10 FEB 98		11 FEB 98
059068-0013-SA	GAC-SLP4T-021098	AQUEOUS	10 FEB 98		11 FEB 98
059068-0013-FD	GAC-SLP4TD-021098	AQUEOUS	10 FEB 98		11 FEB 98
059068-0013-MS	GAC-SLP4TMS-021098	AQUEOUS	10 FEB 98		11 FEB 98
059068-0013-SD	GAC-SLP4TMSD-021098	AQUEOUS	10 FEB 98		11 FEB 98

Quanterra
Environmental Services

ANALYTICAL TEST REQUESTS
for
City of St. Louis Park

Lab ID: 059068	Group Code	Analysis Description	Custom Test?
0001 - 0003, 0003	A	Polynuclear Aromatic Hydrocarbons	N
		Prep - PAH Semivolatile Organics by GC/MS, 5	N
0001	B	Polynuclear Aromatic Hydrocarbons	N
		Prep - PAH Semivolatile Organics by GC/MS, 5	N
0011 , 0011, 0012 - 0013, 0013	C	Polynuclear Aromatic Hydrocarbons	N
		Prep - PAH Semivolatile Organics by GC/MS, 5	N

ANALYTICAL RESULTS

The analytical results for this project are presented in the following data tables. Each data table includes sample identification information, and when available and appropriate, dates sampled, received, authorized, prepared and analyzed. The authorization date is the date when the project was defined by the client such that laboratory work could begin. The date prepared is typically the date an extraction or digestion was initiated. For volatile organic compounds in water, the date prepared is the date the screening of the sample was performed.

Data sheets contain a listing of the parameters measured in each test, the analytical results and the Quanterra reporting limit. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis, i.e. no correction is made for moisture content.

Quanterra does not routinely blank-correct analytical data. Uncorrected analytical results are reported, along with associated blank results, for all organic and metals analyses. Analytical results and blank results are reported for conventional inorganic parameters as specified in the method. In addition, surrogate recovery data is presented for all GC/MS analyses. The surrogate recovery is an indication of the affect of the sample matrix on the performance of the method.

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: GAC-SLP4TFB-021098
Lab ID: 059068-0001-FB
Matrix: AQUEOUS
Authorized: 11 FEB 98

Sampled: 10 FEB 98
Received: 11 FEB 98

Prepared: 16 FEB 98
Analyzed: 03 MAR 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	4.8	
2,3-Dihydroindene	ND	ng/L	4.7	
Indene	ND	ng/L	0.85	
Naphthalene	ND	ng/L	6.2	
Benzo(b)thiophene	ND	ng/L	0.85	
Quinoline	ND	ng/L	6.5	
1H-Indole	ND	ng/L	2.4	
2-Methylnaphthalene	ND	ng/L	3.7	
1-Methylnaphthalene	ND	ng/L	2.7	
Biphenyl	ND	ng/L	4.1	
Acenaphthylene	ND	ng/L	1.3	
Acenaphthene	ND	ng/L	1.2	
Dibenzofuran	ND	ng/L	0.95	
Fluorene	0.95	ng/L	0.95	B
Dibenzothiophene	ND	ng/L	1.0	
Phenanthrene	5.8	ng/L	1.2	B
Anthracene	ND	ng/L	2.6	
Acridine	ND	ng/L	5.8	
Carbazole	ND	ng/L	1.8	
Fluoranthene	3.7	ng/L	2.9	B
Pyrene	2.4	ng/L	1.3	B
Benzo(a)anthracene	ND	ng/L	2.4	
Chrysene	ND	ng/L	2.7	
Benzo(b)fluoranthene	ND	ng/L	2.4	
Benzo(k)fluoranthene	ND	ng/L	2.2	
Benzo(e)pyrene	ND	ng/L	1.8	
Benzo(a)pyrene	ND	ng/L	2.2	
Perylene	ND	ng/L	2.4	
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0	
Dibenz(a,h)anthracene	ND	ng/L	1.5	
Benzo(g,h,i)perylene	ND	ng/L	2.7	

Surrogate	Recovery		Limits
Naphthalene-d8	91	%	21-108
Fluorene-d10	90	%	41-162
Chrysene-d12	64	%	10-118

Dilution factor is 0.95. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
ND = Not Detected

Reported By: Tom Claeys

Approved By: Audrey Cornell

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: GAC-SLP4TFBD-021098
Lab ID: 059068-0001-FD
Matrix: AQUEOUS
Authorized: 11 FEB 98
Sampled: 10 FEB 98
Received: 11 FEB 98
Prepared: 16 FEB 98
Analyzed: 03 MAR 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	4.8	
2,3-Dihydroindene	ND	ng/L	4.7	
Indene	ND	ng/L	0.85	
Naphthalene	ND	ng/L	6.1	
Benzo(b)thiophene	ND	ng/L	0.85	
Quinoline	ND	ng/L	6.5	
1H-Indole	ND	ng/L	2.4	
2-Methylnaphthalene	ND	ng/L	3.7	
1-Methylnaphthalene	ND	ng/L	2.6	
Biphenyl	ND	ng/L	4.1	
Acenaphthylene	ND	ng/L	1.3	
Acenaphthene	ND	ng/L	1.2	
Dibenzofuran	ND	ng/L	0.95	
Fluorene	ND	ng/L	0.95	
Dibenzothiophene	ND	ng/L	1.0	
Phenanthrene	3.2	ng/L	1.2	B
Anthracene	ND	ng/L	2.6	
Acridine	ND	ng/L	5.8	
Carbazole	ND	ng/L	1.8	
Fluoranthene	ND	ng/L	2.9	
Pyrene	1.6	ng/L	1.3	B
Benzo(a)anthracene	ND	ng/L	2.4	
Chrysene	ND	ng/L	2.6	
Benzo(b)fluoranthene	ND	ng/L	2.4	
Benzo(k)fluoranthene	ND	ng/L	2.2	
Benzo(e)pyrene	ND	ng/L	1.8	
Benzo(a)pyrene	ND	ng/L	2.2	
Perylene	ND	ng/L	2.4	
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0	
Dibenz(a,h)anthracene	ND	ng/L	1.5	
Benzo(g,h,i)perylene	ND	ng/L	2.6	

Surrogate	Recovery		Limits
Naphthalene-d8	95	%	21-108
Fluorene-d10	90	%	41-162
Chrysene-d12	64	%	10-118

Dilution factor is 0.95. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
ND = Not Detected

Reported By: Tom Claeys
Approved By: Audrey Cornell

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: GAC-SLP4TLE-021098
Lab ID: 059068-0002-SA
Matrix: AQUEOUS Sampled: 10 FEB 98 Prepared: 16 FEB 98
Authorized: 11 FEB 98 Received: 11 FEB 98 Analyzed: 03 MAR 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	5.0	
2,3-Dihydroindene	25	ng/L	4.9	
Indene	2.1	ng/L	0.88	
Naphthalene	ND	ng/L	6.3	
Benzo(b)thiophene	ND	ng/L	0.88	
Quinoline	ND	ng/L	6.7	
1H-Indole	ND	ng/L	2.4	
2-Methylnaphthalene	ND	ng/L	3.8	
1-Methylnaphthalene	ND	ng/L	2.7	
Biphenyl	ND	ng/L	4.2	
Acenaphthylene	ND	ng/L	1.4	
Acenaphthene	27	ng/L	1.3	
Dibenzofuran	ND	ng/L	0.98	
Fluorene	ND	ng/L	0.98	
Dibenzothiophene	ND	ng/L	1.1	
Phenanthrene	3.2	ng/L	1.3	B
Anthracene	ND	ng/L	2.6	
Acridine	ND	ng/L	6.0	
Carbazole	3.2	ng/L	1.9	
Fluoranthene	3.3	ng/L	3.0	B
Pyrene	2.4	ng/L	1.4	B
Benzo(a)anthracene	ND	ng/L	2.4	
Chrysene	ND	ng/L	2.7	
Benzo(b)fluoranthene	ND	ng/L	2.4	
Benzo(k)fluoranthene	ND	ng/L	2.2	
Benzo(e)pyrene	ND	ng/L	1.9	
Benzo(a)pyrene	ND	ng/L	2.2	
Perylene	ND	ng/L	2.4	
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0	
Dibenz(a,h)anthracene	ND	ng/L	1.6	
Benzo(g,h,i)perylene	ND	ng/L	2.7	

Surrogate	Recovery		Limits
Naphthalene-d8	91	%	21-108
Fluorene-d10	89	%	41-162
Chrysene-d12	35	%	10-118

Dilution factor is 0.98. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: GAC-SLP4T-021098
Lab ID: 059068-0003-SA
Matrix: AQUEOUS Sampled: 10 FEB 98 Prepared: 16 FEB 98
Authorized: 11 FEB 98 Received: 11 FEB 98 Analyzed: 03 MAR 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	4.8	
2,3-Dihydroindene	ND	ng/L	4.7	
Indene	ND	ng/L	0.85	
Naphthalene	ND	ng/L	6.2	
Benzo(b)thiophene	ND	ng/L	0.85	
Quinoline	ND	ng/L	6.5	
1H-Indole	ND	ng/L	2.4	
2-Methylnaphthalene	ND	ng/L	3.7	
1-Methylnaphthalene	ND	ng/L	2.7	
Biphenyl	ND	ng/L	4.1	
Acenaphthylene	ND	ng/L	1.3	
Acenaphthene	ND	ng/L	1.2	
Dibenzofuran	1.0	ng/L	0.95	B
Fluorene	1.0	ng/L	0.95	B
Dibenzothiophene	ND	ng/L	1.0	
Phenanthrene	5.7	ng/L	1.2	B
Anthracene	ND	ng/L	2.6	
Acridine	ND	ng/L	5.8	
Carbazole	ND	ng/L	1.8	
Fluoranthene	3.6	ng/L	2.9	B
Pyrene	2.5	ng/L	1.3	B
Benzo(a)anthracene	ND	ng/L	2.4	
Chrysene	ND	ng/L	2.7	
Benzo(b)fluoranthene	ND	ng/L	2.4	
Benzo(k)fluoranthene	ND	ng/L	2.2	
Benzo(e)pyrene	ND	ng/L	1.8	
Benzo(a)pyrene	ND	ng/L	2.2	
Perylene	ND	ng/L	2.4	
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0	
Dibenz(a,h)anthracene	ND	ng/L	1.5	
Benzo(g,h,i)perylene	ND	ng/L	2.7	

Surrogate	Recovery		Limits
Naphthalene-d8	94	%	21-108
Fluorene-d10	91	%	41-162
Chrysene-d12	31	%	10-118

Dilution factor is 0.95. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: GAC-SLP4TD-021098
Lab ID: 059068-0003-FD
Matrix: AQUEOUS
Authorized: 11 FEB 98
Sampled: 10 FEB 98
Received: 11 FEB 98
Prepared: 16 FEB 98
Analyzed: 03 MAR 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	4.8	
2,3-Dihydroindene	ND	ng/L	4.8	
Indene	ND	ng/L	0.86	
Naphthalene	ND	ng/L	6.2	
Benzo(b)thiophene	ND	ng/L	0.86	
Quinoline	ND	ng/L	6.6	
1H-Indole	ND	ng/L	2.4	
2-Methylnaphthalene	ND	ng/L	3.7	
1-Methylnaphthalene	ND	ng/L	2.7	
Biphenyl	ND	ng/L	4.1	
Acenaphthylene	ND	ng/L	1.3	
Acenaphthene	ND	ng/L	1.2	
Dibenzofuran	ND	ng/L	0.95	
Fluorene	1.0	ng/L	0.95	B
Dibenzothiophene	ND	ng/L	1.0	
Phenanthrene	8.9	ng/L	1.2	B
Anthracene	ND	ng/L	2.6	
Acridine	ND	ng/L	5.8	
Carbazole	ND	ng/L	1.8	
Fluoranthene	3.5	ng/L	2.9	B
Pyrene	2.0	ng/L	1.3	B
Benzo(a)anthracene	ND	ng/L	2.4	
Chrysene	ND	ng/L	2.7	
Benzo(b)fluoranthene	ND	ng/L	2.4	
Benzo(k)fluoranthene	ND	ng/L	2.2	
Benzo(e)pyrene	ND	ng/L	1.8	
Benzo(a)pyrene	ND	ng/L	2.2	
Perylene	ND	ng/L	2.4	
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0	
Dibenz(a,h)anthracene	ND	ng/L	1.5	
Benzo(g,h,i)perylene	ND	ng/L	2.7	

Surrogate	Recovery		Limits
Naphthalene-d8	89	%	21-108
Fluorene-d10	85	%	41-162
Chrysene-d12	32	%	10-118

Dilution factor is 0.95. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
ND = Not Detected

Reported By: Tom Claeys
Approved By: Audrey Cornell

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: GAC-SLP4TFB-021098
Lab ID: 059068-0011-FB
Matrix: AQUEOUS
Authorized: 11 FEB 98

Sampled: 10 FEB 98
Received: 11 FEB 98

Prepared: 14 APR 98
Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
2,3-Benzofuran	ND	ng/L	5.1
2,3-Dihydroindene	ND	ng/L	5.0
Indene	ND	ng/L	0.90
Naphthalene	ND	ng/L	6.5
Benzo(b)thiophene	ND	ng/L	0.90
Quinoline	ND	ng/L	6.9
1H-Indole	ND	ng/L	2.5
2-Methylnaphthalene	ND	ng/L	3.9
1-Methylnaphthalene	ND	ng/L	2.8
Biphenyl	ND	ng/L	4.3
Acenaphthylene	ND	ng/L	1.4
Acenaphthene	ND	ng/L	1.3
Dibenzofuran	ND	ng/L	1.0
Fluorene	ND	ng/L	1.0
Dibenzothiophene	ND	ng/L	1.1
Phenanthrene	ND	ng/L	1.3
Anthracene	ND	ng/L	2.7
Acridine	ND	ng/L	6.1
Carbazole	ND	ng/L	1.9
Fluoranthene	ND	ng/L	3.1
Pyrene	ND	ng/L	1.4
Benzo(a)anthracene	ND	ng/L	2.5
Chrysene	ND	ng/L	2.8
Benzo(b)fluoranthene	ND	ng/L	2.5
Benzo(k)fluoranthene	ND	ng/L	2.3
Benzo(e)pyrene	ND	ng/L	1.9
Benzo(a)pyrene	ND	ng/L	2.3
Perylene	ND	ng/L	2.5
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.1
Dibenz(a,h)anthracene	ND	ng/L	1.6
Benzo(g,h,i)perylene	ND	ng/L	2.8

Surrogate	Recovery		Limits
Naphthalene-d8	80	%	21-108
Fluorene-d10	64	%	41-162
Chrysene-d12	57	%	10-118

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Lisa Burgesser

Approved By: Audrey Cornell

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: GAC-SLP4TFBD-021098
Lab ID: 059068-0011-FD
Matrix: AQUEOUS Sampled: 10 FEB 98 Prepared: 14 APR 98
Authorized: 11 FEB 98 Received: 11 FEB 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
2,3-Benzofuran	ND	ng/L	4.8
2,3-Dihydroindene	ND	ng/L	4.7
Indene	ND	ng/L	0.85
Naphthalene	ND	ng/L	6.2
Benzo(b)thiophene	ND	ng/L	0.85
Quinoline	ND	ng/L	6.5
1H-Indole	ND	ng/L	2.4
2-Methylnaphthalene	ND	ng/L	3.7
1-Methylnaphthalene	ND	ng/L	2.7
Biphenyl	ND	ng/L	4.1
Acenaphthylene	ND	ng/L	1.3
Acenaphthene	ND	ng/L	1.2
Dibenzofuran	ND	ng/L	0.95
Fluorene	ND	ng/L	0.95
Dibenzothiophene	ND	ng/L	1.0
Phenanthrene	ND	ng/L	1.2
Anthracene	ND	ng/L	2.6
Acridine	ND	ng/L	5.8
Carbazole	ND	ng/L	1.8
Fluoranthene	ND	ng/L	2.9
Pyrene	ND	ng/L	1.3
Benzo(a)anthracene	ND	ng/L	2.4
Chrysene	ND	ng/L	2.7
Benzo(b)fluoranthene	ND	ng/L	2.4
Benzo(k)fluoranthene	ND	ng/L	2.2
Benzo(e)pyrene	ND	ng/L	1.8
Benzo(a)pyrene	ND	ng/L	2.2
Perylene	ND	ng/L	2.4
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0
Dibenz(a,h)anthracene	ND	ng/L	1.5
Benzo(g,h,i)perylene	ND	ng/L	2.7

Surrogate	Recovery		Limits
Naphthalene-d8	79	%	21-108
Fluorene-d10	64	%	41-162
Chrysene-d12	59	%	10-118

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Lisa Burgesser Approved By: Audrey Cornell

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: GAC-SLP4TLE-021098
Lab ID: 059068-0012-SA
Matrix: AQUEOUS
Authorized: 11 FEB 98

Sampled: 10 FEB 98
Received: 11 FEB 98

Prepared: 14 APR 98
Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	4.9	
2,3-Dihydroindene	34	ng/L	4.8	
Indene	1.8	ng/L	0.87	
Naphthalene	ND	ng/L	6.3	
Benzo(b)thiophene	4.4	ng/L	0.87	
Quinoline	ND	ng/L	6.7	
1H-Indole	ND	ng/L	2.4	
2-Methylnaphthalene	ND	ng/L	3.8	
1-Methylnaphthalene	ND	ng/L	2.7	
Biphenyl	ND	ng/L	4.2	
Acenaphthylene	ND	ng/L	1.4	
Acenaphthene	29	ng/L	1.3	
Dibenzofuran	ND	ng/L	0.97	
Fluorene	ND	ng/L	0.97	
Dibenzothiophene	ND	ng/L	1.1	
Phenanthrene	2.0	ng/L	1.3	B
Anthracene	ND	ng/L	2.6	
Acridine	ND	ng/L	5.9	
Carbazole	3.6	ng/L	1.8	
Fluoranthene	ND	ng/L	3.0	
Pyrene	1.6	ng/L	1.4	
Benzo(a)anthracene	ND	ng/L	2.4	
Chrysene	ND	ng/L	2.7	
Benzo(b)fluoranthene	ND	ng/L	2.4	
Benzo(k)fluoranthene	ND	ng/L	2.2	
Benzo(e)pyrene	ND	ng/L	1.8	
Benzo(a)pyrene	ND	ng/L	2.2	
Perylene	ND	ng/L	2.4	
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0	
Dibenz(a,h)anthracene	ND	ng/L	1.5	
Benzo(g,h,i)perylene	ND	ng/L	2.7	

Surrogate	Recovery		Limits
Naphthalene-d8	76	%	21-108
Fluorene-d10	62	%	41-162
Chrysene-d12	33	%	10-118

Dilution factor is 0.97. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
ND = Not Detected

Reported By: Lisa Burgesser

Approved By: Audrey Cornell

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: GAC-SLP4T-021098
Lab ID: 059068-0013-SA
Matrix: AQUEOUS
Authorized: 11 FEB 98
Sampled: 10 FEB 98
Received: 11 FEB 98
Prepared: 14 APR 98
Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
2,3-Benzofuran	ND	ng/L	4.8
2,3-Dihydroindene	ND	ng/L	4.7
Indene	ND	ng/L	0.85
Naphthalene	ND	ng/L	6.2
Benzo(b)thiophene	ND	ng/L	0.85
Quinoline	ND	ng/L	6.5
1H-Indole	ND	ng/L	2.4
2-Methylnaphthalene	ND	ng/L	3.7
1-Methylnaphthalene	ND	ng/L	2.7
Biphenyl	ND	ng/L	4.1
Acenaphthylene	ND	ng/L	1.3
Acenaphthene	ND	ng/L	1.2
Dibenzofuran	ND	ng/L	0.95
Fluorene	ND	ng/L	0.95
Dibenzothiophene	ND	ng/L	1.0
Phenanthrene	ND	ng/L	1.2
Anthracene	ND	ng/L	2.6
Acridine	ND	ng/L	5.8
Carbazole	ND	ng/L	1.8
Fluoranthene	ND	ng/L	2.9
Pyrene	ND	ng/L	1.3
Benzo(a)anthracene	ND	ng/L	2.4
Chrysene	ND	ng/L	2.7
Benzo(b)fluoranthene	ND	ng/L	2.4
Benzo(k)fluoranthene	ND	ng/L	2.2
Benzo(e)pyrene	ND	ng/L	1.8
Benzo(a)pyrene	ND	ng/L	2.2
Perylene	ND	ng/L	2.4
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0
Dibenz(a,h)anthracene	ND	ng/L	1.5
Benzo(g,h,i)perylene	ND	ng/L	2.7

Surrogate	Recovery		Limits
Naphthalene-d8	81	%	21-108
Fluorene-d10	64	%	41-162
Chrysene-d12	33	%	10-118

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Lisa Burgesser
Approved By: Audrey Cornell

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: GAC-SLP4TD-021098
Lab ID: 059068-0013-FD
Matrix: AQUEOUS
Authorized: 11 FEB 98
Sampled: 10 FEB 98
Received: 11 FEB 98
Prepared: 14 APR 98
Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
2,3-Benzofuran	ND	ng/L	5.4
2,3-Dihydroindene	ND	ng/L	5.3
Indene	ND	ng/L	0.95
Naphthalene	ND	ng/L	6.8
Benzo(b)thiophene	ND	ng/L	0.95
Quinoline	ND	ng/L	7.3
1H-Indole	ND	ng/L	2.6
2-Methylnaphthalene	ND	ng/L	4.1
1-Methylnaphthalene	ND	ng/L	2.9
Biphenyl	ND	ng/L	4.5
Acenaphthylene	ND	ng/L	1.5
Acenaphthene	ND	ng/L	1.4
Dibenzofuran	ND	ng/L	1.1
Fluorene	ND	ng/L	1.1
Dibenzothiophene	ND	ng/L	1.2
Phenanthrene	ND	ng/L	1.4
Anthracene	ND	ng/L	2.8
Acridine	ND	ng/L	6.4
Carbazole	ND	ng/L	2.0
Fluoranthene	ND	ng/L	3.3
Pyrene	ND	ng/L	1.5
Benzo(a)anthracene	ND	ng/L	2.6
Chrysene	ND	ng/L	2.9
Benzo(b)fluoranthene	ND	ng/L	2.6
Benzo(k)fluoranthene	ND	ng/L	2.4
Benzo(e)pyrene	ND	ng/L	2.0
Benzo(a)pyrene	ND	ng/L	2.4
Perylene	ND	ng/L	2.6
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.2
Dibenz(a,h)anthracene	ND	ng/L	1.7
Benzo(g,h,i)perylene	ND	ng/L	2.9

Surrogate	Recovery		Limits
Naphthalene-d8	78	%	21-108
Fluorene-d10	61	%	41-162
Chrysene-d12	22	%	10-118

Dilution factor is 1.1. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Lisa Burgesser

Approved By: Audrey Cornell

Quanterra
Environmental Services

QC SUMMARY

The Quanterra laboratories operate under a vigorous QA/QC program designed to ensure the generation of scientifically valid, legally defensible data by monitoring every aspect of laboratory operations. Routine QA/QC procedures include the use of approved methodologies, independent verification of analytical standards, use of duplicate Laboratory Control Samples to assess the precision and accuracy of the methodology on a routine basis, and a rigorous system of data review.

The standard laboratory QC package is designed to:

1. establish a strong, cost-effective QC program that ensures the generation of scientifically valid, legally defensible data,

2. assess the laboratory's performance of the analytical method using control limits generated with a well-defined matrix,

3. establish clear-cut guidelines for acceptability of analytical data so that QC decisions can be made immediately at the bench, and

4. provide a standard set of reportables which assures the client of the quality of his data.

The Quanterra QC program is based upon monitoring the precision and accuracy of an analytical method by analyzing a set of Duplicate Control Samples (DCS) at frequent, well-defined intervals. Each DCS is a well-characterized matrix which is spiked with target compounds at 5-100 times the reporting limit, depending upon the methodology being monitored. The purpose of the DCS is not to duplicate the sample matrix, but rather to provide an interference-free, homogeneous matrix from which to gather data to establish control limits. These limits are used to determine whether data generated by the laboratory on any given day is in control.

GAC 2ND QTR

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

June 2, 1998

Mr. Scott E. Anderson
Superintendent of Utilities
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Scott:

Enclosed is the report for 11 aqueous samples received at Quanterra Environmental Services, Denver on April 29, 1998. Included with the report is a quality control summary. Please call if you have any questions.

Sincerely,

Kurt C. Ill
Technology Manager

Enclosures

Quanterra #0060158

ANALYTICAL RESULTS

FOR

CITY OF ST. LOUIS PARK

QUANTERRA NO. 060158

June 2, 1998

Prepared by: _____

Kurt C. Ill

Quanterra
Environmental Services

NARRATIVE

On April 29, 1998, Quanterra Environmental Services, Denver received 11 aqueous samples from the City of St. Louis Park.

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data.

General Comments

Dilution factors listed on the data sheets for the aqueous semivolatile organic parameters are based on the volume of sample actually extracted relative to the nominal volume of 1.0 liter. Any additional dilutions performed on the samples after extraction are also included in the dilution factor. All results and reporting limits are adjusted relative to the sample volume extracted and any subsequent dilutions performed. Dilution factors are rounded to two significant figures for reporting; all calculations are performed before rounding.

GC/MS Semivolatile Organics

Client samples with laboratory Ids 060158-0001SA, -0002SA and –0003SA were analyzed at a dilution due to target analytes exceeding the linear range of the instrument. The reporting limits were raised accordingly. As a result of dilution, the surrogate compounds associated with sample 060158-0002SA were not detected and are reported as "NC", not calculated.

The spike compound Fluorene is reported at 265% and 319% recovery in the matrix spike and matrix spike duplicate samples which is outside the 69% to 118 % historical limits. Fluorene was spiked a less than 3 to 5 times the concentration of the sample. A matrix effect is indicated. With the exceptions noted above, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory QC samples analyzed in conjunction with the samples in this project were within established control limits.

Quanterra
Environmental Services

LIMs Report Key

Section	Description
Cover Letter	Signature page, report narrative as applicable.
Sample Description Information	Tabulated cross-reference between the Lab ID and Client ID, including matrix, date and time sampled, and the date received for all samples in the project.
Sample Analysis Results Sheets	Lists sample results, test components, reporting limits, dates prepared and analyzed, and any data qualifiers. Pages are organized by test.
QC LOT Assignment Report	Cross-reference between lab IDs and applicable QC batches (DCS, LCS, Blank, MS/SD, DU)
Duplicate Control Sample Report	Percent recovery and RPD results, with acceptance limits, for the laboratory duplicate control samples for each test are tabulated in this report. These are measures of accuracy and precision for each test. Acceptance limits are based upon laboratory historical data.
Laboratory Control Sample Report	Percent recovery results for a single Laboratory Control Sample (if applicable) are tabulated in this report, with the applicable acceptance limits for each test.
Matrix Spike/Matrix Spike Duplicate Report	Percent recovery and RPD results for matrix-specific QC samples and acceptance limits, where applicable. This report can be used to assess matrix effects on an analysis.
Single Control Sample Report	A tabulation of the surrogate recoveries for the blank for organic analyses.
Method Blank Report	A summary of the results of the analysis of the method blank for each test.

List of Abbreviations and Terms

Abbreviation	Term	Abbreviation	Term
DCS	Duplicate Control Sample	MSD	Matrix Spike Duplicate
DU	Sample Duplicate	QC Run	Preparation Batch
EB	Equipment Blank	QC Category	LIMs QC Category
FB	Field Blank	QC Lot	DCS Batch
FD	Field Duplicate	ND	Not Detected at or above the reporting limit expressed
IDL	Instrument Detection Limit (Metals)	QC Matrix	Matrix of the laboratory control sample(s)
LCS	Laboratory Control Sample	RL	Reporting Limit
MB	Method Blank	QC	Quality Control
MDL	Method Detection Limit	SA	Sample
MS	Matrix Spike	SD	Spike Duplicate
RPD	Relative Percent Difference	TB	Trip Blank
ppm (part-per-million)	mg/L or mg/kg (usually)	ppb (part-per-billion)	ug/L or ug/kg (usually)
QUAL	Qualifier flag	DIL	Dilution Factor

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION/ANALYTICAL TEST REQUESTS

Sample Description Information

The Sample Description Information lists all of the samples received in this project together with the internal laboratory identification number assigned for each sample. Each project received at Quanterra's Denver laboratory is assigned a unique six digit number. Samples within the project are numbered sequentially. The laboratory identification number is a combination of the six digit project code and the sample sequence number.

Also given in the Sample Description Information is the Sample Type (matrix), Date of Sampling (if known) and Date of Receipt at the laboratory.

Analytical Test Requests

The Analytical Test Requests lists the analyses that were performed on each sample. The Custom Test column indicates where tests have been modified to conform to the specific requirements of this project.

Quanterra
Environmental Services

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SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
060158-0001-SA	PCJ-SLP4F-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0002-SA	PCJ-SLP10F-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0003-SA	PCJ-SLP4-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0004-SA	PCJ-SLP4T-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0005-SA	PCJ-SLP4LE-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0006-SA	PCJ-SLP10T-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0006-DU	PCJ-SLP10TD-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0006-MS	PCJ-SLP10TMS-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0006-SD	PCJ-SLP10TMSD-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0006-FB	PCJ-SLP10TFB-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0006-FD	PCJ-SLP10TFBD-042898	AQUEOUS	28 APR 98		29 APR 98

Quanterra
Environmental Services

ANALYTICAL TEST REQUESTS
for
City of St. Louis Park

Lab ID: 060158	Group Code	Analysis Description	Custom Test?
0001 - 0006, 0006 , 0006	A	Polynuclear Aromatic Hydrocarbons Prep - PAH Semivolatile Organics by GC/MS, 5	N N

Quanterra
Environmental Services

ANALYTICAL RESULTS

The analytical results for this project are presented in the following data tables. Each data table includes sample identification information, and when available and appropriate, dates sampled, received, authorized, prepared and analyzed. The authorization date is the date when the project was defined by the client such that laboratory work could begin. The date prepared is typically the date an extraction or digestion was initiated. For volatile organic compounds in water, the date prepared is the date the screening of the sample was performed.

Data sheets contain a listing of the parameters measured in each test, the analytical results and the Quanterra reporting limit. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis, i.e. no correction is made for moisture content.

Quanterra does not routinely blank-correct analytical data. Uncorrected analytical results are reported, along with associated blank results, for all organic and metals analyses. Analytical results and blank results are reported for conventional inorganic parameters as specified in the method. In addition, surrogate recovery data is presented for all GC/MS analyses. The surrogate recovery is an indication of the affect of the sample matrix on the performance of the method.

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: PCJ-SLP10F-042898
Lab ID: 060158-0002-SA
Matrix: AQUEOUS Sampled: 28 APR 98 Prepared: 03 MAY 98
Authorized: 29 APR 98 Received: 29 APR 98 Analyzed: 22 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	48	
2,3-Dihydroindene	290	ng/L	47	
Indene	12	ng/L	8.5	
Naphthalene	ND	ng/L	62	
Benzo(b)thiophene	50	ng/L	8.5	
Quinoline	ND	ng/L	65	
1H-Indole	ND	ng/L	24	
2-Methylnaphthalene	ND	ng/L	37	
1-Methylnaphthalene	ND	ng/L	27	
Biphenyl	ND	ng/L	41	
Acenaphthylene	130	ng/L	13	
Acenaphthene	590	ng/L	12	
Dibenzofuran	34	ng/L	9.5	B
Fluorene	200	ng/L	9.5	B
Dibenzothiophene	29	ng/L	10	B
Phenanthrene	ND	ng/L	12	
Anthracene	ND	ng/L	26	
Acridine	ND	ng/L	58	
Carbazole	ND	ng/L	18	
Fluoranthene	47	ng/L	29	B
Pyrene	79	ng/L	13	B
Benzo(a)anthracene	ND	ng/L	24	
Chrysene	ND	ng/L	27	
Benzo(b)fluoranthene	ND	ng/L	24	
Benzo(k)fluoranthene	ND	ng/L	22	
Benzo(e)pyrene	ND	ng/L	18	
Benzo(a)pyrene	ND	ng/L	22	
Perylene	ND	ng/L	24	
Indeno(1,2,3-cd)pyrene	ND	ng/L	20	
Dibenz(a,h)anthracene	ND	ng/L	15	
Benzo(g,h,i)perylene	ND	ng/L	27	

Surrogate	Recovery		Limits
Naphthalene-d8	NC	%	21-108
Fluorene-d10	NC	%	41-162
Chrysene-d12	NC	%	10-118

Dilution factor is 9.5. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
NC = Not Calculated, calculation not applicable.
ND = Not Detected

Reported By: Tom Claeys Approved By: Mary Helen Kelan

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: PCJ-SLP4-042898
Lab ID: 060158-0003-SA
Matrix: AQUEOUS Sampled: 28 APR 98 Prepared: 03 MAY 98
Authorized: 29 APR 98 Received: 29 APR 98 Analyzed: 22 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	20	
2,3-Dihydroindene	160	ng/L	19	
Indene	8.6	ng/L	3.5	
Naphthalene	ND	ng/L	25	
Benzo(b)thiophene	27	ng/L	3.5	
Quinoline	ND	ng/L	27	
1H-Indole	ND	ng/L	9.6	
2-Methylnaphthalene	ND	ng/L	15	
1-Methylnaphthalene	ND	ng/L	11	
Biphenyl	ND	ng/L	17	
Acenaphthylene	ND	ng/L	5.4	
Acenaphthene	190	ng/L	5.0	
Dibenzofuran	ND	ng/L	3.8	
Fluorene	ND	ng/L	3.8	
Dibenzothiophene	ND	ng/L	4.2	
Phenanthrene	ND	ng/L	5.0	
Anthracene	ND	ng/L	10	
Acridine	ND	ng/L	23	
Carbazole	26	ng/L	7.3	
Fluoranthene	15	ng/L	12	B
Pyrene	13	ng/L	5.4	B
Benzo(a)anthracene	ND	ng/L	9.6	
Chrysene	ND	ng/L	11	
Benzo(b)fluoranthene	ND	ng/L	9.6	
Benzo(k)fluoranthene	ND	ng/L	8.8	
Benzo(e)pyrene	ND	ng/L	7.3	
Benzo(a)pyrene	ND	ng/L	8.8	
Perylene	ND	ng/L	9.6	
Indeno(1,2,3-cd)pyrene	ND	ng/L	8.1	
Dibenz(a,h)anthracene	ND	ng/L	6.2	
Benzo(g,h,i)perylene	ND	ng/L	11	

Surrogate	Recovery		Limits
Naphthalene-d8	71	%	21-108
Fluorene-d10	78	%	41-162
Chrysene-d12	48	%	10-118

Dilution factor is 3.8. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
ND = Not Detected

Reported By: Tom Claeys Approved By: Mary Helen Kelan

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: PCJ-SLP10T-042898
Lab ID: 060158-0006-SA
Matrix: AQUEOUS Sampled: 28 APR 98 Prepared: 03 MAY 98
Authorized: 29 APR 98 Received: 29 APR 98 Analyzed: 19 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	4.8	
2,3-Dihydroindene	20	ng/L	4.8	
Indene	ND	ng/L	0.86	
Naphthalene	ND	ng/L	6.2	
Benzo(b)thiophene	2.3	ng/L	0.86	
Quinoline	ND	ng/L	6.6	
1H-Indole	ND	ng/L	2.4	
2-Methylnaphthalene	ND	ng/L	3.7	
1-Methylnaphthalene	ND	ng/L	2.7	
Biphenyl	ND	ng/L	4.1	
Acenaphthylene	5.6	ng/L	1.3	
Acenaphthene	28	ng/L	1.2	
Dibenzofuran	1.4	ng/L	0.95	B
Fluorene	7.6	ng/L	0.95	B
Dibenzothiophene	1.2	ng/L	1.0	B
Phenanthrene	2.1	ng/L	1.2	B
Anthracene	ND	ng/L	2.6	
Acridine	ND	ng/L	5.8	
Carbazole	ND	ng/L	1.8	
Fluoranthene	3.2	ng/L	2.9	B
Pyrene	4.5	ng/L	1.3	B
Benzo(a)anthracene	ND	ng/L	2.4	
Chrysene	ND	ng/L	2.7	
Benzo(b)fluoranthene	ND	ng/L	2.4	
Benzo(k)fluoranthene	ND	ng/L	2.2	
Benzo(e)pyrene	ND	ng/L	1.8	
Benzo(a)pyrene	ND	ng/L	2.2	
Perylene	ND	ng/L	2.4	
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0	
Dibenz(a,h)anthracene	ND	ng/L	1.5	
Benzo(g,h,i)perylene	ND 15.9	ng/L	2.7	

Surrogate	Recovery		Limits
Naphthalene-d8	46	%	21-108
Fluorene-d10	59	%	41-162
Chrysene-d12	44	%	10-118

Dilution factor is 0.95. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
ND = Not Detected

Reported By: Tom Claeys Approved By: Mary Helen Kelan

A 8

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: PCJ-SLP4F-042898
Lab ID: 060158-0001-SA
Matrix: AQUEOUS Sampled: 28 APR 98 Prepared: 03 MAY 98
Authorized: 29 APR 98 Received: 29 APR 98 Analyzed: 22 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	21	
2,3-Dihydroindene	160	ng/L	20	
Indene	7.2	ng/L	3.6	
Naphthalene	ND	ng/L	26	
Benzo(b)thiophene	27	ng/L	3.6	
Quinoline	ND	ng/L	28	
1H-Indole	ND	ng/L	10	
2-Methylnaphthalene	ND	ng/L	16	
1-Methylnaphthalene	ND	ng/L	11	
Biphenyl	ND	ng/L	17	
Acenaphthylene	ND	ng/L	5.7	
Acenaphthene	160	ng/L	5.3	
Dibenzofuran	ND	ng/L	4.1	
Fluorene	ND	ng/L	4.1	
Dibenzothiophene	ND	ng/L	4.5	
Phenanthrene	ND	ng/L	5.3	
Anthracene	ND	ng/L	11	
Acridine	ND	ng/L	25	
Carbazole	22	ng/L	7.7	
Fluoranthene	ND	ng/L	13	
Pyrene	9.5	ng/L	5.7	B
Benzo(a)anthracene	ND	ng/L	10	
Chrysene	ND	ng/L	11	
Benzo(b)fluoranthene	ND	ng/L	10	
Benzo(k)fluoranthene	ND	ng/L	9.3	
Benzo(e)pyrene	ND	ng/L	7.7	
Benzo(a)pyrene	ND	ng/L	9.3	
Perylene	ND	ng/L	10	
Indeno(1,2,3-cd)pyrene	ND	ng/L	8.5	
Dibenz(a,h)anthracene	ND	ng/L	6.5	
Benzo(g,h,i)perylene	ND	ng/L	11	

Surrogate	Recovery		Limits
Naphthalene-d8	69	%	21-108
Fluorene-d10	69	%	41-162
Chrysene-d12	56	%	10-118

Dilution factor is 4.1. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
ND = Not Detected

Reported By: Tom Claeys Approved By: Mary Helen Kelan

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: PCJ-SLP4T-042898
Lab ID: 060158-0004-SA
Matrix: AQUEOUS Sampled: 28 APR 98 Prepared: 03 MAY 98
Authorized: 29 APR 98 Received: 29 APR 98 Analyzed: 20 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	4.8	
2,3-Dihydroindene	ND	ng/L	4.7	
Indene	ND	ng/L	0.85	
Naphthalene	ND	ng/L	6.2	
Benzo(b)thiophene	ND	ng/L	0.85	
Quinoline	ND	ng/L	6.5	
1H-Indole	ND	ng/L	2.4	
2-Methylnaphthalene	ND	ng/L	3.7	
1-Methylnaphthalene	ND	ng/L	2.7	
Biphenyl	ND	ng/L	4.1	
Acenaphthylene	ND	ng/L	1.3	
Acenaphthene	ND	ng/L	1.2	
Dibenzofuran	ND	ng/L	0.95	
Fluorene	ND	ng/L	0.95	
Dibenzothiophene	ND	ng/L	1.0	
Phenanthrene	2.2	ng/L	1.2	B
Anthracene	ND	ng/L	2.6	
Acridine	ND	ng/L	5.8	
Carbazole	ND	ng/L	1.8	
Fluoranthene	ND	ng/L	2.9	
Pyrene	ND	ng/L	1.3	
Benzo(a)anthracene	ND	ng/L	2.4	
Chrysene	ND	ng/L	2.7	
Benzo(b)fluoranthene	ND	ng/L	2.4	
Benzo(k)fluoranthene	ND	ng/L	2.2	
Benzo(e)pyrene	ND	ng/L	1.8	
Benzo(a)pyrene	ND	ng/L	2.2	
Perylene	ND	ng/L	2.4	
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0	
Dibenz(a,h)anthracene	ND	ng/L	1.5	
Benzo(g,h,i)perylene	ND	ng/L	2.7	

Surrogate	Recovery		Limits
Naphthalene-d8	60	%	21-108
Fluorene-d10	77	%	41-162
Chrysene-d12	42	%	10-118

Dilution factor is 0.95. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
ND = Not Detected

Reported By: Tom Claeys Approved By: Mary Helen Kelan

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: PCJ-SLP4LE-042898
Lab ID: 060158-0005-SA
Matrix: AQUEOUS
Authorized: 29 APR 98
Sampled: 28 APR 98
Received: 29 APR 98
Prepared: 03 MAY 98
Analyzed: 20 MAY 98

Parameter	Result	Units	Reporting Limit
2,3-Benzofuran	ND	ng/L	4.8
2,3-Dihydroindene	36	ng/L	4.7
Indene	1.9	ng/L	0.85
Naphthalene	ND	ng/L	6.2
Benzo(b)thiophene	5.9	ng/L	0.85
Quinoline	ND	ng/L	6.5
1H-Indole	ND	ng/L	2.4
2-Methylnaphthalene	ND	ng/L	3.7
1-Methylnaphthalene	ND	ng/L	2.7
Biphenyl	ND	ng/L	4.1
Acenaphthylene	ND	ng/L	1.3
Acenaphthene	54	ng/L	1.2
Dibenzofuran	ND	ng/L	0.95
Fluorene	ND	ng/L	0.95
Dibenzothiophene	ND	ng/L	1.0
Phenanthrene	3.5	ng/L	1.2
Anthracene	ND	ng/L	2.6
Acridine	ND	ng/L	5.8
Carbazole	8.0	ng/L	1.8
Fluoranthene	5.2	ng/L	2.9
Pyrene	4.6	ng/L	1.3
Benzo(a)anthracene	ND	ng/L	2.4
Chrysene	ND	ng/L	2.7
Benzo(b)fluoranthene	ND	ng/L	2.4
Benzo(k)fluoranthene	ND	ng/L	2.2
Benzo(e)pyrene	ND	ng/L	1.8
Benzo(a)pyrene	ND	ng/L	2.2
Perylene	ND	ng/L	2.4
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0
Dibenz(a,h)anthracene	ND	ng/L	1.5
Benzo(g,h,i)perylene	ND	ng/L	2.7

Surrogate	Recovery		Limits
Naphthalene-d8	58	%	21-108
Fluorene-d10	71	%	41-162
Chrysene-d12	55	%	10-118

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Tom Claeys

Approved By: Mary Helen Kelan

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: PCJ-SLP10TD-042898
Lab ID: 060158-0006-DU
Matrix: AQUEOUS
Authorized: 29 APR 98
Sampled: 28 APR 98
Received: 29 APR 98
Prepared: 03 MAY 98
Analyzed: 20 MAY 98

Parameter	Result	Units	Reporting Limit
2,3-Benzofuran	ND	ng/L	4.8
2,3-Dihydroindene	38	ng/L	4.8
Indene	1.1	ng/L	0.86
Naphthalene	ND	ng/L	6.2
Benzo(b)thiophene	4.3	ng/L	0.86
Quinoline	ND	ng/L	6.6
1H-Indole	ND	ng/L	2.4
2-Methylnaphthalene	ND	ng/L	3.7
1-Methylnaphthalene	ND	ng/L	2.7
Biphenyl	ND	ng/L	4.1
Acenaphthylene	11	ng/L	1.3
Acenaphthene	52	ng/L	1.2
Dibenzofuran	2.4	ng/L	0.95
Fluorene	13	ng/L	0.95
Dibenzothiophene	2.1	ng/L	1.0
Phenanthrene	2.8	ng/L	1.2
Anthracene	ND	ng/L	2.6
Acridine	ND	ng/L	5.8
Carbazole	ND	ng/L	1.8
Fluoranthene	4.6	ng/L	2.9
Pyrene	7.1	ng/L	1.3
Benzo(a)anthracene	ND	ng/L	2.4
Chrysene	ND	ng/L	2.7
Benzo(b)fluoranthene	ND	ng/L	2.4
Benzo(k)fluoranthene	ND	ng/L	2.2
Benzo(e)pyrene	ND	ng/L	1.8
Benzo(a)pyrene	ND	ng/L	2.2
Perylene	ND	ng/L	2.4
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0
Dibenz(a,h)anthracene	ND	ng/L	1.5
Benzo(g,h,i)perylene	ND	ng/L	2.7

Surrogate	Recovery		Limits
Naphthalene-d8	70	%	21-108
Fluorene-d10	83	%	41-162
Chrysene-d12	50	%	10-118

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Tom Claeys

Approved By: Mary Helen Kelan

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: PCJ-SLP10TFB-042898
Lab ID: 060158-0006-FB
Matrix: AQUEOUS Sampled: 28 APR 98 Prepared: 03 MAY 98
Authorized: 29 APR 98 Received: 29 APR 98 Analyzed: 20 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	4.9	
2,3-Dihydroindene	ND	ng/L	4.8	
Indene	ND	ng/L	0.86	
Naphthalene	ND	ng/L	6.2	
Benzo(b)thiophene	ND	ng/L	0.86	
Quinoline	ND	ng/L	6.6	
1H-Indole	ND	ng/L	2.4	
2-Methylnaphthalene	ND	ng/L	3.7	
1-Methylnaphthalene	ND	ng/L	2.7	
Biphenyl	ND	ng/L	4.1	
Acenaphthylene	ND	ng/L	1.3	
Acenaphthene	ND	ng/L	1.2	
Dibenzofuran	ND	ng/L	0.95	
Fluorene	ND	ng/L	0.95	
Dibenzothiophene	ND	ng/L	1.0	
Phenanthrene	1.9	ng/L	1.2	B
Anthracene	ND	ng/L	2.6	
Acridine	ND	ng/L	5.8	
Carbazole	ND	ng/L	1.8	
Fluoranthene	ND	ng/L	3.0	
Pyrene	ND	ng/L	1.3	
Benzo(a)anthracene	ND	ng/L	2.4	
Chrysene	ND	ng/L	2.7	
Benzo(b)fluoranthene	ND	ng/L	2.4	
Benzo(k)fluoranthene	ND	ng/L	2.2	
Benzo(e)pyrene	ND	ng/L	1.8	
Benzo(a)pyrene	ND	ng/L	2.2	
Perylene	ND	ng/L	2.4	
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0	
Dibenz(a,h)anthracene	ND	ng/L	1.5	
Benzo(g,h,i)perylene	ND	ng/L	2.7	

Surrogate	Recovery		Limits
Naphthalene-d8	59	%	21-108
Fluorene-d10	76	%	41-162
Chrysene-d12	76	%	10-118

Dilution factor is 0.95. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
ND = Not Detected

Reported By: Tom Claeys Approved By: Mary Helen Kelan

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: PCJ-SLP10TFBD-042898
Lab ID: 060158-0006-FD
Matrix: AQUEOUS
Authorized: 29 APR 98
Sampled: 28 APR 98
Received: 29 APR 98
Prepared: 03 MAY 98
Analyzed: 20 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	4.9	
2,3-Dihydroindene	ND	ng/L	4.8	
Indene	ND	ng/L	0.87	
Naphthalene	ND	ng/L	6.3	
Benzo(b)thiophene	ND	ng/L	0.87	
Quinoline	ND	ng/L	6.6	
1H-Indole	ND	ng/L	2.4	
2-Methylnaphthalene	ND	ng/L	3.8	
1-Methylnaphthalene	ND	ng/L	2.7	
Biphenyl	ND	ng/L	4.1	
Acenaphthylene	ND	ng/L	1.3	
Acenaphthene	ND	ng/L	1.3	
Dibenzofuran	ND	ng/L	0.96	
Fluorene	ND	ng/L	0.96	
Dibenzothiophene	ND	ng/L	1.1	
Phenanthrene	2.4	ng/L	1.3	B
Anthracene	ND	ng/L	2.6	
Acridine	ND	ng/L	5.9	
Carbazole	ND	ng/L	1.8	
Fluoranthene	ND	ng/L	3.0	
Pyrene	1.6	ng/L	1.3	B
Benzo(a)anthracene	ND	ng/L	2.4	
Chrysene	ND	ng/L	2.7	
Benzo(b)fluoranthene	ND	ng/L	2.4	
Benzo(k)fluoranthene	ND	ng/L	2.2	
Benzo(e)pyrene	ND	ng/L	1.8	
Benzo(a)pyrene	ND	ng/L	2.2	
Perylene	ND	ng/L	2.4	
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0	
Dibenz(a,h)anthracene	ND	ng/L	1.5	
Benzo(g,h,i)perylene	ND	ng/L	2.7	

Surrogate	Recovery		Limits
Naphthalene-d8	60	%	21-108
Fluorene-d10	72	%	41-162
Chrysene-d12	74	%	10-118

Dilution factor is 0.96. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
ND = Not Detected

Reported By: Tom Claeys
Approved By: Mary Helen Kelan

Quanterra
Environmental Services

QC SUMMARY

The Quanterra laboratories operate under a vigorous QA/QC program designed to ensure the generation of scientifically valid, legally defensible data by monitoring every aspect of laboratory operations. Routine QA/QC procedures include the use of approved methodologies, independent verification of analytical standards, use of duplicate Laboratory Control Samples to assess the precision and accuracy of the methodology on a routine basis, and a rigorous system of data review.

The standard laboratory QC package is designed to:

1. establish a strong, cost-effective QC program that ensures the generation of scientifically valid, legally defensible data,

2. assess the laboratory's performance of the analytical method using control limits generated with a well-defined matrix,

3. establish clear-cut guidelines for acceptability of analytical data so that QC decisions can be made immediately at the bench, and

4. provide a standard set of reportables which assures the client of the quality of his data.

The Quanterra QC program is based upon monitoring the precision and accuracy of an analytical method by analyzing a set of Duplicate Control Samples (DCS) at frequent, well-defined intervals. Each DCS is a well-characterized matrix which is spiked with target compounds at 5-100 times the reporting limit, depending upon the methodology being monitored. The purpose of the DCS is not to duplicate the sample matrix, but rather to provide an interference-free, homogeneous matrix from which to gather data to establish control limits. These limits are used to determine whether data generated by the laboratory on any given day is in control.

THIRD QUARTER MONITORING

GAC 3rd QTR

Advanced Analytical Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 467-9136 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

October 22, 1998

Quanterra Environmental Services

Project Lot Number D8I290135

Introduction

Eight aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on September 29, 1998. The samples were logged in under Quanterra Denver's project lot number D8I290135. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for part per trillion (ppt) PAHs.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1997 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

The spike compounds chrysene, indene, benzo (e) pyrene and quinoline were not recovered in either the matrix spike or matrix spike duplicate samples. The spike compounds naphthalene, 2 – methylnaphthalene and fluorene were recovered below the acceptance limits. All surrogate compounds were within acceptance limits. The laboratory control sample and method blank were within acceptance limits. A matrix effect is indicated.

Except for the above, this data package is in compliance with the terms and conditions of the October 1997 QAPP, both technically and for completeness

Reported By: Kurt C. Ill **Date:** October 22, 1998

Kurt C. Ill
Customer Service Manger

EXECUTIVE SUMMARY - Detection Highlights

D8I290135

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GAC-SLP4T-092898 09/28/98 001				
Naphthalene	1.5 J	6.6	ng/L	SW846 8270A SIM
2-Methylnaphthalene	1.5 J	3.9	ng/L	SW846 8270A SIM
Acenaphthene	9.0	1.3	ng/L	SW846 8270A SIM
Phenanthrene	3.2	1.3	ng/L	SW846 8270A SIM
Anthracene	0.50 J	2.7	ng/L	SW846 8270A SIM
Carbazole	1.4 J	1.9	ng/L	SW846 8270A SIM
Fluoranthene	1.4 J	3.1	ng/L	SW846 8270A SIM
Pyrene	1.1 J	1.4	ng/L	SW846 8270A SIM
Indene	0.68 J	0.91	ng/L	SW846 8270A SIM
1-Methylnaphthalene	0.82 J	2.8	ng/L	SW846 8270A SIM
2,3-Dihydroindene	9.0	5.1	ng/L	SW846 8270A SIM
Biphenyl	0.28 J	4.4	ng/L	SW846 8270A SIM
GAC-SLP4TD-092898 09/28/98 002				
Naphthalene	1.3 J	6.6	ng/L	SW846 8270A SIM
2-Methylnaphthalene	1.7 J	3.9	ng/L	SW846 8270A SIM
Acenaphthene	11	1.3	ng/L	SW846 8270A SIM
Fluorene	0.47 J	1.0	ng/L	SW846 8270A SIM
Phenanthrene	3.3	1.3	ng/L	SW846 8270A SIM
Anthracene	0.44 J	2.7	ng/L	SW846 8270A SIM
Carbazole	1.5 J	1.9	ng/L	SW846 8270A SIM
Fluoranthene	1.6 J	3.1	ng/L	SW846 8270A SIM
Pyrene	1.3 J	1.4	ng/L	SW846 8270A SIM
Indene	0.67 J	0.91	ng/L	SW846 8270A SIM
1-Methylnaphthalene	0.92 J	2.8	ng/L	SW846 8270A SIM
2,3-Dihydroindene	11	5.1	ng/L	SW846 8270A SIM
GAC-SLP4TFB-092898 09/28/98 003				
Naphthalene	1.4 J	6.6	ng/L	SW846 8270A SIM
2-Methylnaphthalene	1.2 J	4.0	ng/L	SW846 8270A SIM
Fluorene	0.35 J	1.0	ng/L	SW846 8270A SIM
Phenanthrene	2.8	1.3	ng/L	SW846 8270A SIM
Anthracene	3.1	2.7	ng/L	SW846 8270A SIM
Fluoranthene	1.1 J	3.2	ng/L	SW846 8270A SIM
Pyrene	0.70 J	1.4	ng/L	SW846 8270A SIM
Indene	0.24 J	0.92	ng/L	SW846 8270A SIM
1-Methylnaphthalene	0.77 J	2.9	ng/L	SW846 8270A SIM
2,3-Dihydroindene	0.35 J	5.1	ng/L	SW846 8270A SIM
Biphenyl	0.27 J	4.4	ng/L	SW846 8270A SIM

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EXECUTIVE SUMMARY - Detection Highlights

D8I290135

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GAC-SLP4TFBD-092898 09/28/98 004				
Naphthalene	1.0 J	6.6	ng/L	SW846 8270A SIM
2-Methylnaphthalene	1.2 J	3.9	ng/L	SW846 8270A SIM
Dibenzofuran	0.52 J	1.0	ng/L	SW846 8270A SIM
Phenanthrene	2.8	1.3	ng/L	SW846 8270A SIM
Anthracene	3.1	2.7	ng/L	SW846 8270A SIM
Fluoranthene	0.94 J	3.1	ng/L	SW846 8270A SIM
Pyrene	0.67 J	1.4	ng/L	SW846 8270A SIM
Indene	0.23 J	0.91	ng/L	SW846 8270A SIM
2,3-Dihydroindene	0.98 J	5.0	ng/L	SW846 8270A SIM
GAC-SLP4TLE-092898 09/28/98 005				
Acenaphthylene	2.0	1.4	ng/L	SW846 8270A SIM
Naphthalene	2.4 J	6.5	ng/L	SW846 8270A SIM
Acenaphthene	130	1.3	ng/L	SW846 8270A SIM
Fluorene	0.73 J	1.0	ng/L	SW846 8270A SIM
Phenanthrene	4.6	1.3	ng/L	SW846 8270A SIM
Anthracene	1.3 J	2.7	ng/L	SW846 8270A SIM
Carbazole	20	1.9	ng/L	SW846 8270A SIM
Fluoranthene	11	3.1	ng/L	SW846 8270A SIM
Pyrene	10	1.4	ng/L	SW846 8270A SIM
Indene	6.5	0.90	ng/L	SW846 8270A SIM
2,3-Benzofuran	1.0 J	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	120	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	22	0.90	ng/L	SW846 8270A SIM
Indole	4.7	2.5	ng/L	SW846 8270A SIM
Biphenyl	0.63 J	4.3	ng/L	SW846 8270A SIM
Dibenzothiophene	1.0 J	1.1	ng/L	SW846 8270A SIM
GAC-SLP10T-092898 09/28/98 006				
Naphthalene	1.6 J	6.6	ng/L	SW846 8270A SIM
2-Methylnaphthalene	1.3 J	4.0	ng/L	SW846 8270A SIM
Acenaphthene	2.6	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	0.75 J	1.0	ng/L	SW846 8270A SIM
Fluorene	1.9	1.0	ng/L	SW846 8270A SIM
Phenanthrene	3.0	1.3	ng/L	SW846 8270A SIM
Anthracene	0.23 J	2.7	ng/L	SW846 8270A SIM
Fluoranthene	1.5 J	3.1	ng/L	SW846 8270A SIM
Pyrene	1.0 J	1.4	ng/L	SW846 8270A SIM
Indene	0.28 J	0.91	ng/L	SW846 8270A SIM
1-Methylnaphthalene	0.74 J	2.8	ng/L	SW846 8270A SIM
2,3-Dihydroindene	1.2 J	5.1	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8I290135

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GAC-SLP10T-092898 09/28/98 006				
Biphenyl	0.49 J	4.4	ng/L	SW846 8270A SIM

ANALYTICAL METHODS SUMMARY

D8I290135

PARAMETER	ANALYTICAL METHOD
Base/Neutrals and Acids	SW846 8270A SIM

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

METHOD / ANALYST SUMMARY

D8I290135

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270A SIM	Dianne Buckheister	001210

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

QC DATA ASSOCIATION SUMMARY

D8I290135

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270A SIM		8273210	8273068
002	WATER	SW846 8270A SIM		8273210	8273068
003	WATER	SW846 8270A SIM		8273210	8273068
004	WATER	SW846 8270A SIM		8273210	8273068
005	WATER	SW846 8270A SIM		8273210	8273068
006	WATER	SW846 8270A SIM		8273210	8273068

SAMPLE SUMMARY

D8I290135

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CLX1W	001	GAC-SLP4T-092898	09/28/98	
CLX21	002	GAC-SLP4TD-092898	09/28/98	
CLX22	003	GAC-SLP4TFB-092898	09/28/98	
CLX23	004	GAC-SLP4TFBD-092898	09/28/98	
CLX25	005	GAC-SLP4TLE-092898	09/28/98	
CLX26	006	GAC-SLP10T-092898	09/28/98	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4T-092898

GC/MS Semivolatiles

Lot-Sample #...: D8I290135-001 Work Order #...: CLX1W101 Matrix.....: WATER
Date Sampled...: 09/28/98 Date Received..: 09/29/98
Prep Date.....: 09/30/98 Analysis Date..: 10/15/98
Prep Batch #...: 8273210 Analysis Time..: 20:34
Dilution Factor: 1.01

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	**1.5 J**	**6.6**	**ng/L**
2-Methylnaphthalene	**1.5 J**	**3.9**	**ng/L**
Acenaphthene	**9.0**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	ND	1.0	ng/L
Phenanthrene	**3.2**	**1.3**	**ng/L**
Anthracene	**0.50 J**	**2.7**	**ng/L**
Carbazole	**1.4 J**	**1.9**	**ng/L**
Fluoranthene	**1.4 J**	**3.1**	**ng/L**
Pyrene	**1.1 J**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**0.68 J**	**0.91**	**ng/L**
1-Methylnaphthalene	**0.82 J**	**2.8**	**ng/L**
2,3-Benzofuran	ND	5.2	ng/L
2,3-Dihydroindene	**9.0**	**5.1**	**ng/L**
Benzo(b)thiophene	ND	0.91	ng/L
Indole	ND	2.5	ng/L
Biphenyl	**0.28 J**	**4.4**	**ng/L**
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.2	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	7.0	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	34	(10 - 118)
Fluorene d-10	58	(41 - 162)
Naphthalene-d8	54	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TD-092898

GC/MS Semivolatiles

Lot-Sample #...: D8I290135-002 Work Order #...: CLX21101 Matrix.....: WATER
Date Sampled...: 09/28/98 Date Received..: 09/29/98
Prep Date.....: 09/30/98 Analysis Date..: 10/15/98
Prep Batch #...: 8273210 Analysis Time..: 22:23
Dilution Factor: 1.01

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	**1.3 J**	**6.6**	**ng/L**
2-Methylnaphthalene	**1.7 J**	**3.9**	**ng/L**
Acenaphthene	**11**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	**0.47 J**	**1.0**	**ng/L**
Phenanthrene	**3.3**	**1.3**	**ng/L**
Anthracene	**0.44 J**	**2.7**	**ng/L**
Carbazole	**1.5 J**	**1.9**	**ng/L**
Fluoranthene	**1.6 J**	**3.1**	**ng/L**
Pyrene	**1.3 J**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**0.67 J**	**0.91**	**ng/L**
1-Methylnaphthalene	**0.92 J**	**2.8**	**ng/L**
2,3-Benzofuran	ND	5.2	ng/L
2,3-Dihydroindene	**11**	**5.1**	**ng/L**
Benzo(b)thiophene	ND	0.91	ng/L
Indole	ND	2.5	ng/L
Biphenyl	ND	4.4	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.2	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	7.0	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	38	(10 - 118)
Fluorene d-10	66	(41 - 162)
Naphthalene-d8	61	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TFB-092898

GC/MS Semivolatiles

Lot-Sample #...: D8I290135-003 Work Order #...: CLX22101 Matrix.....: WATER
Date Sampled...: 09/28/98 Date Received..: 09/29/98
Prep Date.....: 09/30/98 Analysis Date..: 10/15/98
Prep Batch #...: 8273210 Analysis Time..: 22:59
Dilution Factor: 1.01

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	**1.4 J**	**6.6**	**ng/L**
2-Methylnaphthalene	**1.2 J**	**4.0**	**ng/L**
Acenaphthene	ND	1.3	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	**0.35 J**	**1.0**	**ng/L**
Phenanthrene	**2.8**	**1.3**	**ng/L**
Anthracene	**3.1**	**2.7**	**ng/L**
Carbazole	ND	1.9	ng/L
Fluoranthene	**1.1 J**	**3.2**	**ng/L**
Pyrene	**0.70 J**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.9	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.9	ng/L
Indene	**0.24 J**	**0.92**	**ng/L**
1-Methylnaphthalene	**0.77 J**	**2.9**	**ng/L**
2,3-Benzofuran	ND	5.2	ng/L
2,3-Dihydroindene	**0.35 J**	**5.1**	**ng/L**
Benzo(b)thiophene	ND	0.92	ng/L
Indole	ND	2.5	ng/L
Biphenyl	**0.27 J**	**4.4**	**ng/L**
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.2	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	7.0	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	59	(10 - 118)
Fluorene d-10	59	(41 - 162)
Naphthalene-d8	65	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TFBD-092898

GC/MS Semivolatiles

Lot-Sample #...: D8I290135-004 Work Order #...: CLX23101 Matrix.....: WATER
Date Sampled...: 09/28/98 Date Received..: 09/29/98
Prep Date.....: 09/30/98 Analysis Date..: 10/15/98
Prep Batch #...: 8273210 Analysis Time..: 23:35
Dilution Factor: 1.01
Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	**1.0 J**	**6.6**	**ng/L**
2-Methylnaphthalene	**1.2 J**	**3.9**	**ng/L**
Acenaphthene	ND	1.3	ng/L
Dibenzofuran	**0.52 J**	**1.0**	**ng/L**
Fluorene	ND	1.0	ng/L
Phenanthrene	**2.8**	**1.3**	**ng/L**
Anthracene	**3.1**	**2.7**	**ng/L**
Carbazole	ND	1.9	ng/L
Fluoranthene	**0.94 J**	**3.1**	**ng/L**
Pyrene	**0.67 J**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**0.23 J**	**0.91**	**ng/L**
1-Methylnaphthalene	ND	2.8	ng/L
2,3-Benzofuran	ND	5.2	ng/L
2,3-Dihydroindene	**0.98 J**	**5.0**	**ng/L**
Benzo(b)thiophene	ND	0.91	ng/L
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.2	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	7.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	55	(10 - 118)
Fluorene d-10	61	(41 - 162)
Naphthalene-d8	50	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TLE-092898

GC/MS Semivolatiles

Lot-Sample #...: D8I290135-005 Work Order #...: CLX25101 Matrix.....: WATER
Date Sampled...: 09/28/98 Date Received..: 09/29/98
Prep Date.....: 09/30/98 Analysis Date..: 10/16/98
Prep Batch #...: 8273210 Analysis Time..: 00:11
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**2.0**	**1.4**	**ng/L**
Naphthalene	**2.4 J**	**6.5**	**ng/L**
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	**130**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	**0.73 J**	**1.0**	**ng/L**
Phenanthrene	**4.6**	**1.3**	**ng/L**
Anthracene	**1.3 J**	**2.7**	**ng/L**
Carbazole	**20**	**1.9**	**ng/L**
Fluoranthene	**11**	**3.1**	**ng/L**
Pyrene	**10**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**6.5**	**0.90**	**ng/L**
1-Methylnaphthalene	ND	2.8	ng/L
2,3-Benzofuran	**1.0 J**	**5.1**	**ng/L**
2,3-Dihydroindene	**120**	**5.0**	**ng/L**
Benzo(b)thiophene	**22**	**0.90**	**ng/L**
Indole	**4.7**	**2.5**	**ng/L**
Biphenyl	**0.63 J**	**4.3**	**ng/L**
Dibenzothiophene	**1.0 J**	**1.1**	**ng/L**
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	32	(10 - 118)
Fluorene d-10	70	(41 - 162)
Naphthalene-d8	74	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP10T-092898

GC/MS Semivolatiles

Lot-Sample #...: D8I290135-006 Work Order #...: CLX26101 Matrix.....: WATER
Date Sampled...: 09/28/98 Date Received..: 09/29/98
Prep Date.....: 09/30/98 Analysis Date..: 10/16/98
Prep Batch #...: 8273210 Analysis Time..: 00:48
Dilution Factor: 1.01

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	**1.6 J**	**6.6**	**ng/L**
2-Methylnaphthalene	**1.3 J**	**4.0**	**ng/L**
Acenaphthene	**2.6**	**1.3**	**ng/L**
Dibenzofuran	**0.75 J**	**1.0**	**ng/L**
Fluorene	**1.9**	**1.0**	**ng/L**
Phenanthrene	**3.0**	**1.3**	**ng/L**
Anthracene	**0.23 J**	**2.7**	**ng/L**
Carbazole	ND	1.9	ng/L
Fluoranthene	**1.5 J**	**3.1**	**ng/L**
Pyrene	**1.0 J**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**0.28 J**	**0.91**	**ng/L**
1-Methylnaphthalene	**0.74 J**	**2.8**	**ng/L**
2,3-Benzofuran	ND	5.2	ng/L
2,3-Dihydroindene	**1.2 J**	**5.1**	**ng/L**
Benzo(b)thiophene	ND	0.91	ng/L
Indole	ND	2.5	ng/L
Biphenyl	**0.49 J**	**4.4**	**ng/L**
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.2	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	7.0	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	32	(10 - 118)
Fluorene d-10	61	(41 - 162)
Naphthalene-d8	57	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D8I290135 Work Order #...: CM099101 Matrix.....: WATER
MB Lot-Sample #: D8I300000-210

Prep Date.....: 09/30/98 Analysis Time..: 17:33
Analysis Date..: 10/15/98 Prep Batch #...: 8273210
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthylene	ND	1.4	ng/L	SW846 8270A SIM
Naphthalene	ND	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	1.2 J	3.9	ng/L	SW846 8270A SIM
Acenaphthene	0.21 J	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	0.54 J	1.0	ng/L	SW846 8270A SIM
Fluorene	0.55 J	1.0	ng/L	SW846 8270A SIM
Phenanthrene	3.3	1.3	ng/L	SW846 8270A SIM
Anthracene	ND	2.7	ng/L	SW846 8270A SIM
Carbazole	ND	1.9	ng/L	SW846 8270A SIM
Fluoranthene	1.2 J	3.1	ng/L	SW846 8270A SIM
Pyrene	0.82 J	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	ND	2.5	ng/L	SW846 8270A SIM
Chrysene	0.28 J	2.8	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	ND	2.5	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	ND	2.3	ng/L	SW846 8270A SIM
Benzo(a)pyrene	ND	2.3	ng/L	SW846 8270A SIM
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	ND	2.8	ng/L	SW846 8270A SIM
Indene	0.26 J	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	0.88 J	2.8	ng/L	SW846 8270A SIM
2,3-Benzofuran	ND	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	0.16 J	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	ND	0.90	ng/L	SW846 8270A SIM
Indole	ND	2.5	ng/L	SW846 8270A SIM
Biphenyl	0.30 J	4.3	ng/L	SW846 8270A SIM
Dibenzothiophene	ND	1.1	ng/L	SW846 8270A SIM
Acridine	ND	6.1	ng/L	SW846 8270A SIM
Benzo(e)pyrene	ND	1.9	ng/L	SW846 8270A SIM
Perylene	ND	2.5	ng/L	SW846 8270A SIM
Quinoline	ND	6.9	ng/L	SW846 8270A SIM
Dibenz(a,h)anthracene	ND	1.6	ng/L	SW846 8270A SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	66	(10 - 118)
Fluorene d-10	71	(41 - 162)
Naphthalene-d8	74	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

FOURTH QUARTER MONITORING

GAC 4TH QTR

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8K040108

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Kurt C. Ill
Project Manager

January 7, 1999

Advanced Analytical Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 467-9136 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

January 7, 1999

Quanterra Environmental Services

Project Lot Number D8K040108

Introduction

Eight aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on November 4, 1998. The samples were logged in under Quanterra Denver's project lot number D8K040108. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for part per trillion (ppt) PAHs.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1997 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

Client sample with laboratory Id D8K040108-005 was analyzed at a dilution due to target analytes exceeding the linear range of the instrument. The reporting limits were raised accordingly.

The spike compound benzo (e) pyrene in both the matrix spike and matrix spike duplicate samples is reported at 9.6% abd 13% recovery which are below the 20% to 150% acceptance limits. Benzo (e) pyrene was recovered within acceptance limits in the Laboratory Control Sample. A matrix effect is indicated.

The relative percent difference (RPD) for the spike compounds 2-methylnaphthalene, fluorene and benzo (e) pyrene are reported above the 0% to 20% acceptance criteria. All recoveries were within accpetance limits.

The following compounds were reported above the MDL but below the reporting limit (RL) in the method blank: benz0 (a) anthracene, benzo (b) fluoranthrene, benzo (a) pyrene and perylene.

Except for the above, this data package is in compliance with the terms and conditions of the October 1997 QAPP, both technically and for completeness

Reported By: Kurt C. Ill **Date:** Jan 7, 1999

Kurt C. Ill
Customer Service Manger

EXECUTIVE SUMMARY - Detection Highlights

D8K040108

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GAC-SLP4T-110398 11/03/98 001				
Acenaphthylene	0.58 J	1.4	ng/L	SW846 8270A SIM
Naphthalene	2.8 J	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	2.6 J	3.9	ng/L	SW846 8270A SIM
Acenaphthene	20	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	0.93 J	1.0	ng/L	SW846 8270A SIM
Fluorene	0.96 J	1.0	ng/L	SW846 8270A SIM
Phenanthrene	5.7	1.3	ng/L	SW846 8270A SIM
Anthracene	0.50 J	2.7	ng/L	SW846 8270A SIM
Carbazole	3.3	1.9	ng/L	SW846 8270A SIM
Fluoranthene	3.3	3.1	ng/L	SW846 8270A SIM
Pyrene	2.5	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	0.062 J	2.5	ng/L	SW846 8270A SIM
Chrysene	0.096 J	2.8	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	0.094 J	2.5	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	0.084 J	2.3	ng/L	SW846 8270A SIM
Benzo(a)pyrene	0.073 J	2.3	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	0.12 J	2.8	ng/L	SW846 8270A SIM
Indene	1.2	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	1.5 J	2.8	ng/L	SW846 8270A SIM
2,3-Benzofuran	0.28 J	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	20	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	2.8	0.90	ng/L	SW846 8270A SIM
Indole	0.37 J	2.5	ng/L	SW846 8270A SIM
Biphenyl	20	4.3	ng/L	SW846 8270A SIM
Dibenzothiophene	0.58 J	1.1	ng/L	SW846 8270A SIM
Acridine	3.0 J	6.1	ng/L	SW846 8270A SIM
Benzo(e)pyrene	0.063 J	1.9	ng/L	SW846 8270A SIM
Quinoline	2.4 J	6.9	ng/L	SW846 8270A SIM
GAC-SLP4TD-110398 11/03/98 002				
Acenaphthylene	0.70 J	1.4	ng/L	SW846 8270A SIM
Naphthalene	2.7 J	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	2.1 J	3.9	ng/L	SW846 8270A SIM
Acenaphthene	20	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	1.1	1.0	ng/L	SW846 8270A SIM
Fluorene	1.1	1.0	ng/L	SW846 8270A SIM
Phenanthrene	3.9	1.3	ng/L	SW846 8270A SIM
Anthracene	0.53 J	2.7	ng/L	SW846 8270A SIM
Carbazole	3.4	1.9	ng/L	SW846 8270A SIM
Fluoranthene	2.9 J	3.1	ng/L	SW846 8270A SIM
Pyrene	2.3	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	0.078 J	2.5	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8K040108

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GAC-SLP4TD-110398 11/03/98 002				
Chrysene	0.12 J	2.8	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	0.15 J	2.5	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	0.10 J	2.3	ng/L	SW846 8270A SIM
Benzo(a)pyrene	0.094 J	2.3	ng/L	SW846 8270A SIM
Indeno(1,2,3-cd)pyrene	0.070 J	2.1	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	0.32 J	2.8	ng/L	SW846 8270A SIM
Indene	1.2	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	1.1 J	2.8	ng/L	SW846 8270A SIM
2,3-Benzofuran	0.26 J	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	20	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	2.8	0.90	ng/L	SW846 8270A SIM
Indole	0.44 J	2.5	ng/L	SW846 8270A SIM
Biphenyl	20	4.3	ng/L	SW846 8270A SIM
Dibenzothiophene	0.75 J	1.1	ng/L	SW846 8270A SIM
Acridine	3.1 J	6.1	ng/L	SW846 8270A SIM
Benzo(e)pyrene	0.15 J	1.9	ng/L	SW846 8270A SIM
Perylene	0.13 J	2.5	ng/L	SW846 8270A SIM
Quinoline	3.6 J	6.9	ng/L	SW846 8270A SIM
Dibenz(a,h)anthracene	0.054 J	1.6	ng/L	SW846 8270A SIM
GAC-SLP4TFB-110398 11/03/98 003				
Acenaphthylene	0.23 J	1.4	ng/L	SW846 8270A SIM
Naphthalene	2.0 J	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	1.7 J	3.9	ng/L	SW846 8270A SIM
Acenaphthene	1.2 J	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	0.29 J	1.0	ng/L	SW846 8270A SIM
Fluorene	0.61 J	1.0	ng/L	SW846 8270A SIM
Phenanthrene	4.1	1.3	ng/L	SW846 8270A SIM
Anthracene	0.34 J	2.7	ng/L	SW846 8270A SIM
Carbazole	0.12 J	1.9	ng/L	SW846 8270A SIM
Fluoranthene	1.6 J	3.1	ng/L	SW846 8270A SIM
Pyrene	1.1 J	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	0.055 J	2.5	ng/L	SW846 8270A SIM
Chrysene	0.10 J	2.8	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	0.085 J	2.5	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	0.077 J	2.3	ng/L	SW846 8270A SIM
Benzo(a)pyrene	0.068 J	2.3	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	0.060 J	2.8	ng/L	SW846 8270A SIM
Indene	0.31 J	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	0.80 J	2.8	ng/L	SW846 8270A SIM
2,3-Benzofuran	0.33 J	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	0.60 J	5.0	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8K040108

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GAC-SLP4TFB-110398 11/03/98 003				
Benzo(b)thiophene	0.055 J	0.90	ng/L	SW846 8270A SIM
Indole	0.31 J	2.5	ng/L	SW846 8270A SIM
Biphenyl	1.2 J	4.3	ng/L	SW846 8270A SIM
Dibenzothiophene	0.27 J	1.1	ng/L	SW846 8270A SIM
Acridine	2.5 J	6.1	ng/L	SW846 8270A SIM
Benzo(e)pyrene	0.058 J	1.9	ng/L	SW846 8270A SIM
Perylene	0.048 J	2.5	ng/L	SW846 8270A SIM
Quinoline	1.1 J	6.9	ng/L	SW846 8270A SIM
GAC-SLP4TFBD-110398 11/03/98 004				
Acenaphthylene	0.20 J	1.4	ng/L	SW846 8270A SIM
Naphthalene	1.9 J	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	1.6 J	3.9	ng/L	SW846 8270A SIM
Acenaphthene	1.0 J	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	0.29 J	1.0	ng/L	SW846 8270A SIM
Fluorene	0.56 J	1.0	ng/L	SW846 8270A SIM
Phenanthrene	3.5	1.3	ng/L	SW846 8270A SIM
Anthracene	0.25 J	2.7	ng/L	SW846 8270A SIM
Carbazole	0.16 J	1.9	ng/L	SW846 8270A SIM
Fluoranthene	1.5 J	3.1	ng/L	SW846 8270A SIM
Pyrene	0.86 J	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	0.049 J	2.5	ng/L	SW846 8270A SIM
Chrysene	0.090 J	2.8	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	0.083 J	2.5	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	0.075 J	2.3	ng/L	SW846 8270A SIM
Benzo(a)pyrene	0.062 J	2.3	ng/L	SW846 8270A SIM
Indene	0.26 J	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	0.71 J	2.8	ng/L	SW846 8270A SIM
2,3-Benzofuran	0.29 J	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	0.50 J	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	0.071 J	0.90	ng/L	SW846 8270A SIM
Indole	0.44 J	2.5	ng/L	SW846 8270A SIM
Biphenyl	1.0 J	4.3	ng/L	SW846 8270A SIM
Dibenzothiophene	0.24 J	1.1	ng/L	SW846 8270A SIM
Acridine	2.3 J	6.1	ng/L	SW846 8270A SIM
Benzo(e)pyrene	0.039 J	1.9	ng/L	SW846 8270A SIM
Quinoline	1.6 J	6.9	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8K040108

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GAC-SLP4TLE-110398 11/03/98 005				
Acenaphthylene	1.7 J	2.8	ng/L	SW846 8270A SIM
Naphthalene	2.8 J	13	ng/L	SW846 8270A SIM
2-Methylnaphthalene	2.3 J	7.8	ng/L	SW846 8270A SIM
Acenaphthene	110	2.6	ng/L	SW846 8270A SIM
Dibenzofuran	1.2 J	2.0	ng/L	SW846 8270A SIM
Fluorene	1.1 J	2.0	ng/L	SW846 8270A SIM
Phenanthrene	7.4	2.6	ng/L	SW846 8270A SIM
Anthracene	1.6 J	5.4	ng/L	SW846 8270A SIM
Carbazole	23	3.8	ng/L	SW846 8270A SIM
Fluoranthene	13	6.2	ng/L	SW846 8270A SIM
Pyrene	12	2.8	ng/L	SW846 8270A SIM
Benzo(a)anthracene	0.067 J	5.0	ng/L	SW846 8270A SIM
Chrysene	0.11 J	5.6	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	0.12 J	5.0	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	0.11 J	4.6	ng/L	SW846 8270A SIM
Indene	5.5	1.8	ng/L	SW846 8270A SIM
1-Methylnaphthalene	1.4 J	5.6	ng/L	SW846 8270A SIM
2,3-Benzofuran	0.88 J	10	ng/L	SW846 8270A SIM
2,3-Dihydroindene	99	10	ng/L	SW846 8270A SIM
Benzo(b)thiophene	17	1.8	ng/L	SW846 8270A SIM
Indole	0.83 J	5.0	ng/L	SW846 8270A SIM
Biphenyl	110	8.6	ng/L	SW846 8270A SIM
Dibenzothiophene	1.4 J	2.2	ng/L	SW846 8270A SIM
Acridine	5.8 J	12	ng/L	SW846 8270A SIM
Quinoline	4.6 J	14	ng/L	SW846 8270A SIM
GAC-SLP10T-110398 11/03/98 006				
Acenaphthylene	1.2 J	1.4	ng/L	SW846 8270A SIM
Naphthalene	1.7 J	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	1.8 J	3.9	ng/L	SW846 8270A SIM
Acenaphthene	5.9	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	1.2	1.0	ng/L	SW846 8270A SIM
Fluorene	4.0	1.0	ng/L	SW846 8270A SIM
Phenanthrene	3.9	1.3	ng/L	SW846 8270A SIM
Anthracene	0.54 J	2.7	ng/L	SW846 8270A SIM
Carbazole	0.22 J	1.9	ng/L	SW846 8270A SIM
Fluoranthene	2.9 J	3.1	ng/L	SW846 8270A SIM
Pyrene	3.3	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	0.097 J	2.5	ng/L	SW846 8270A SIM
Chrysene	0.066 J	2.8	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	0.055 J	2.5	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	0.050 J	2.3	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8K040108

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GAC-SLP10T-110398 11/03/98 006				
Benzo(a)pyrene	0.045 J	2.3	ng/L	SW846 8270A SIM
Indene	0.31 J	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	0.96 J	2.8	ng/L	SW846 8270A SIM
2,3-Benzofuran	0.32 J	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	2.0 J	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	0.36 J	0.90	ng/L	SW846 8270A SIM
Indole	0.12 J	2.5	ng/L	SW846 8270A SIM
Biphenyl	5.9	4.3	ng/L	SW846 8270A SIM
Dibenzothiophene	0.92 J	1.1	ng/L	SW846 8270A SIM
Acridine	2.5 J	6.1	ng/L	SW846 8270A SIM
Benzo(e)pyrene	0.037 J	1.9	ng/L	SW846 8270A SIM
Quinoline	1.0 J	6.9	ng/L	SW846 8270A SIM

ANALYTICAL METHODS SUMMARY

D8K040108

PARAMETER	ANALYTICAL METHOD
Base/Neutrals and Acids	SW846 8270A SIM

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

METHOD / ANALYST SUMMARY

D8K040108

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270A SIM	Phil Anderson	008918

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

D8K040108

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CN40E	001	GAC-SLP4T-110398	11/03/98	
CN40N	002	GAC-SLP4TD-110398	11/03/98	
CN40Q	003	GAC-SLP4TFB-110398	11/03/98	
CN40R	004	GAC-SLP4TFBD-110398	11/03/98	
CN40V	005	GAC-SLP4TLE-110398	11/03/98	
CN410	006	GAC-SLP10T-110398	11/03/98	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4T-110398

GC/MS Semivolatiles

Lot-Sample #...: D8K040108-001 Work Order #...: CN40E101 Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98
Prep Date.....: 11/06/98 Analysis Date..: 12/04/98
Prep Batch #...: 8313367 Analysis Time..: 01:18
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	0.58 J	1.4	ng/L
Naphthalene	2.8 J	6.5	ng/L
2-Methylnaphthalene	2.6 J	3.9	ng/L
Acenaphthene	20	1.3	ng/L
Dibenzofuran	0.93 J	1.0	ng/L
Fluorene	0.96 J	1.0	ng/L
Phenanthrene	5.7	1.3	ng/L
Anthracene	0.50 J	2.7	ng/L
Carbazole	3.3	1.9	ng/L
Fluoranthene	3.3	3.1	ng/L
Pyrene	2.5	1.4	ng/L
Benzo(a)anthracene	0.062 J	2.5	ng/L
Chrysene	0.096 J	2.8	ng/L
Benzo(b)fluoranthene	0.094 J	2.5	ng/L
Benzo(k)fluoranthene	0.084 J	2.3	ng/L
Benzo(a)pyrene	0.073 J	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	0.12 J	2.8	ng/L
Indene	1.2	0.90	ng/L
1-Methylnaphthalene	1.5 J	2.8	ng/L
2,3-Benzofuran	0.28 J	5.1	ng/L
2,3-Dihydroindene	20	5.0	ng/L
Benzo(b)thiophene	2.8	0.90	ng/L
Indole	0.37 J	2.5	ng/L
Biphenyl	20	4.3	ng/L
Dibenzothiophene	0.58 J	1.1	ng/L
Acridine	3.0 J	6.1	ng/L
Benzo(e)pyrene	0.063 J	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	2.4 J	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	47	(10 - 118)
Fluorene d-10	86	(41 - 162)
Naphthalene-d8	63	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TFB-110398

GC/MS Semivolatiles

Lot-Sample #...: D8K040108-003 Work Order #...: CN40Q101 Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98
Prep Date.....: 11/06/98 Analysis Date..: 12/04/98
Prep Batch #...: 8313367 Analysis Time..: 03:43
Dilution Factor: 1
Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	0.23 J	1.4	ng/L
Naphthalene	2.0 J	6.5	ng/L
2-Methylnaphthalene	1.7 J	3.9	ng/L
Acenaphthene	1.2 J	1.3	ng/L
Dibenzofuran	0.29 J	1.0	ng/L
Fluorene	0.61 J	1.0	ng/L
Phenanthrene	4.1	1.3	ng/L
Anthracene	0.34 J	2.7	ng/L
Carbazole	0.12 J	1.9	ng/L
Fluoranthene	1.6 J	3.1	ng/L
Pyrene	1.1 J	1.4	ng/L
Benzo(a)anthracene	0.055 J	2.5	ng/L
Chrysene	0.10 J	2.8	ng/L
Benzo(b)fluoranthene	0.085 J	2.5	ng/L
Benzo(k)fluoranthene	0.077 J	2.3	ng/L
Benzo(a)pyrene	0.068 J	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	0.060 J	2.8	ng/L
Indene	0.31 J	0.90	ng/L
1-Methylnaphthalene	0.80 J	2.8	ng/L
2,3-Benzofuran	0.33 J	5.1	ng/L
2,3-Dihydroindene	0.60 J	5.0	ng/L
Benzo(b)thiophene	0.055 J	0.90	ng/L
Indole	0.31 J	2.5	ng/L
Biphenyl	1.2 J	4.3	ng/L
Dibenzothiophene	0.27 J	1.1	ng/L
Acridine	2.5 J	6.1	ng/L
Benzo(e)pyrene	0.058 J	1.9	ng/L
Perylene	0.048 J	2.5	ng/L
Quinoline	1.1 J	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	67	(10 - 118)
Fluorene d-10	118	(41 - 162)
Naphthalene-d8	47	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TFBD-110398

GC/MS Semivolatiles

Lot-Sample #...: D8K040108-004 Work Order #...: CN40R101 Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98
Prep Date.....: 11/06/98 Analysis Date..: 12/04/98
Prep Batch #...: 8313367 Analysis Time..: 04:19
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	0.20 J	1.4	ng/L
Naphthalene	1.9 J	6.5	ng/L
2-Methylnaphthalene	1.6 J	3.9	ng/L
Acenaphthene	1.0 J	1.3	ng/L
Dibenzofuran	0.29 J	1.0	ng/L
Fluorene	0.56 J	1.0	ng/L
Phenanthrene	3.5	1.3	ng/L
Anthracene	0.25 J	2.7	ng/L
Carbazole	0.16 J	1.9	ng/L
Fluoranthene	1.5 J	3.1	ng/L
Pyrene	0.86 J	1.4	ng/L
Benzo(a)anthracene	0.049 J	2.5	ng/L
Chrysene	0.090 J	2.8	ng/L
Benzo(b)fluoranthene	0.083 J	2.5	ng/L
Benzo(k)fluoranthene	0.075 J	2.3	ng/L
Benzo(a)pyrene	0.062 J	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	0.26 J	0.90	ng/L
1-Methylnaphthalene	0.71 J	2.8	ng/L
2,3-Benzofuran	0.29 J	5.1	ng/L
2,3-Dihydroindene	0.50 J	5.0	ng/L
Benzo(b)thiophene	0.071 J	0.90	ng/L
Indole	0.44 J	2.5	ng/L
Biphenyl	1.0 J	4.3	ng/L
Dibenzothiophene	0.24 J	1.1	ng/L
Acridine	2.3 J	6.1	ng/L
Benzo(e)pyrene	0.039 J	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	1.6 J	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	79	(10 - 118)
Fluorene d-10	94	(41 - 162)
Naphthalene-d8	53	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TLE-110398

GC/MS Semivolatiles

Lot-Sample #...: D8K040108-005 Work Order #...: CN40V101 Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98
Prep Date.....: 11/06/98 Analysis Date..: 12/04/98
Prep Batch #...: 8313367 Analysis Time..: 04:54
Dilution Factor: 2

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**1.7 J**	**2.8**	**ng/L**
Naphthalene	**2.8 J**	**13**	**ng/L**
2-Methylnaphthalene	**2.3 J**	**7.8**	**ng/L**
Acenaphthene	**110**	**2.6**	**ng/L**
Dibenzofuran	**1.2 J**	**2.0**	**ng/L**
Fluorene	**1.1 J**	**2.0**	**ng/L**
Phenanthrene	**7.4**	**2.6**	**ng/L**
Anthracene	**1.6 J**	**5.4**	**ng/L**
Carbazole	**23**	**3.8**	**ng/L**
Fluoranthene	**13**	**6.2**	**ng/L**
Pyrene	**12**	**2.8**	**ng/L**
Benzo(a)anthracene	**0.067 J**	**5.0**	**ng/L**
Chrysene	**0.11 J**	**5.6**	**ng/L**
Benzo(b)fluoranthene	**0.12 J**	**5.0**	**ng/L**
Benzo(k)fluoranthene	**0.11 J**	**4.6**	**ng/L**
Benzo(a)pyrene	ND	4.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	4.2	ng/L
Benzo(ghi)perylene	ND	5.6	ng/L
Indene	**5.5**	**1.8**	**ng/L**
1-Methylnaphthalene	**1.4 J**	**5.6**	**ng/L**
2,3-Benzofuran	**0.88 J**	**10**	**ng/L**
2,3-Dihydroindene	**99**	**10**	**ng/L**
Benzo(b)thiophene	**17**	**1.8**	**ng/L**
Indole	**0.83 J**	**5.0**	**ng/L**
Biphenyl	**110**	**8.6**	**ng/L**
Dibenzothiophene	**1.4 J**	**2.2**	**ng/L**
Acridine	**5.8 J**	**12**	**ng/L**
Benzo(e)pyrene	ND	3.8	ng/L
Perylene	ND	5.0	ng/L
Quinoline	**4.6 J**	**14**	**ng/L**
Dibenz(a,h)anthracene	ND	3.2	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	40	(10 - 118)
Fluorene d-10	68	(41 - 162)
Naphthalene-d8	56	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP10T-110398

GC/MS Semivolatiles

Lot-Sample #...: D8K040108-006 Work Order #...: CN410101 Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98
Prep Date.....: 11/06/98 Analysis Date..: 12/04/98
Prep Batch #...: 8313367 Analysis Time..: 05:29
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	1.2 J	1.4	ng/L
Naphthalene	1.7 J	6.5	ng/L
2-Methylnaphthalene	1.8 J	3.9	ng/L
Acenaphthene	5.9	1.3	ng/L
Dibenzofuran	1.2	1.0	ng/L
Fluorene	4.0	1.0	ng/L
Phenanthrene	3.9	1.3	ng/L
Anthracene	0.54 J	2.7	ng/L
Carbazole	0.22 J	1.9	ng/L
Fluoranthene	2.9 J	3.1	ng/L
Pyrene	3.3	1.4	ng/L
Benzo(a)anthracene	0.097 J	2.5	ng/L
Chrysene	0.066 J	2.8	ng/L
Benzo(b)fluoranthene	0.055 J	2.5	ng/L
Benzo(k)fluoranthene	0.050 J	2.3	ng/L
Benzo(a)pyrene	0.045 J	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	0.31 J	0.90	ng/L
1-Methylnaphthalene	0.96 J	2.8	ng/L
2,3-Benzofuran	0.32 J	5.1	ng/L
2,3-Dihydroindene	2.0 J	5.0	ng/L
Benzo(b)thiophene	0.36 J	0.90	ng/L
Indole	0.12 J	2.5	ng/L
Biphenyl	5.9	4.3	ng/L
Dibenzothiophene	0.92 J	1.1	ng/L
Acridine	2.5 J	6.1	ng/L
Benzo(e)pyrene	0.037 J	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	1.0 J	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	35	(10 - 118)
Fluorene d-10	79	(41 - 162)
Naphthalene-d8	51	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: PCJ-SLP4F-042898
Lab ID: 060158-0001-SA
Matrix: AQUEOUS Sampled: 28 APR 98 Prepared: 03 MAY 98
Authorized: 29 APR 98 Received: 29 APR 98 Analyzed: 22 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	21	
2,3-Dihydroindene	160	ng/L	20	
Indene	7.2	ng/L	3.6	
Naphthalene	ND	ng/L	26	
Benzo(b)thiophene	27	ng/L	3.6	
Quinoline	ND	ng/L	28	
1H-Indole	ND	ng/L	10	
2-Methylnaphthalene	ND	ng/L	16	
1-Methylnaphthalene	ND	ng/L	11	
Biphenyl	ND	ng/L	17	
Acenaphthylene	ND	ng/L	5.7	
Acenaphthene	160	ng/L	5.3	
Dibenzofuran	ND	ng/L	4.1	
Fluorene	ND	ng/L	4.1	
Dibenzothiophene	ND	ng/L	4.5	
Phenanthrene	ND	ng/L	5.3	
Anthracene	ND	ng/L	11	
Acridine	ND	ng/L	25	
Carbazole	22	ng/L	7.7	
Fluoranthene	ND	ng/L	13	
Pyrene	9.5	ng/L	5.7	B
Benzo(a)anthracene	ND	ng/L	10	
Chrysene	ND	ng/L	11	
Benzo(b)fluoranthene	ND	ng/L	10	
Benzo(k)fluoranthene	ND	ng/L	9.3	
Benzo(e)pyrene	ND	ng/L	7.7	
Benzo(a)pyrene	ND	ng/L	9.3	
Perylene	ND	ng/L	10	
Indeno(1,2,3-cd)pyrene	ND	ng/L	8.5	
Dibenz(a,h)anthracene	ND	ng/L	6.5	
Benzo(g,h,i)perylene	ND	ng/L	11	

Surrogate	Recovery		Limits
Naphthalene-d8	69	%	21-108
Fluorene-d10	69	%	41-162
Chrysene-d12	56	%	10-118

Dilution factor is 4.1. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
ND = Not Detected

Reported By: Tom Claeys Approved By: Mary Helen Kelan

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: PCJ-SLP10F-042898
Lab ID: 060158-0002-SA
Matrix: AQUEOUS Sampled: 28 APR 98 Prepared: 03 MAY 98
Authorized: 29 APR 98 Received: 29 APR 98 Analyzed: 22 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	48	
2,3-Dihydroindene	290	ng/L	47	
Indene	12	ng/L	8.5	
Naphthalene	ND	ng/L	62	
Benzo(b)thiophene	50	ng/L	8.5	
Quinoline	ND	ng/L	65	
1H-Indole	ND	ng/L	24	
2-Methylnaphthalene	ND	ng/L	37	
1-Methylnaphthalene	ND	ng/L	27	
Biphenyl	ND	ng/L	41	
Acenaphthylene	130	ng/L	13	
Acenaphthene	590	ng/L	12	
Dibenzofuran	34	ng/L	9.5	B
Fluorene	200	ng/L	9.5	B
Dibenzothiophene	29	ng/L	10	B
Phenanthrene	ND	ng/L	12	
Anthracene	ND	ng/L	26	
Acridine	ND	ng/L	58	
Carbazole	ND	ng/L	18	
Fluoranthene	47	ng/L	29	B
Pyrene	79	ng/L	13	B
Benzo(a)anthracene	ND	ng/L	24	
Chrysene	ND	ng/L	27	
Benzo(b)fluoranthene	ND	ng/L	24	
Benzo(k)fluoranthene	ND	ng/L	22	
Benzo(e)pyrene	ND	ng/L	18	
Benzo(a)pyrene	ND	ng/L	22	
Perylene	ND	ng/L	24	
Indeno(1,2,3-cd)pyrene	ND	ng/L	20	
Dibenz(a,h)anthracene	ND	ng/L	15	
Benzo(g,h,i)perylene	ND	ng/L	27	

Surrogate	Recovery		Limits
Naphthalene-d8	NC	%	21-108
Fluorene-d10	NC	%	41-162
Chrysene-d12	NC	%	10-118

Dilution factor is 9.5. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
NC = Not Calculated, calculation not applicable.
ND = Not Detected

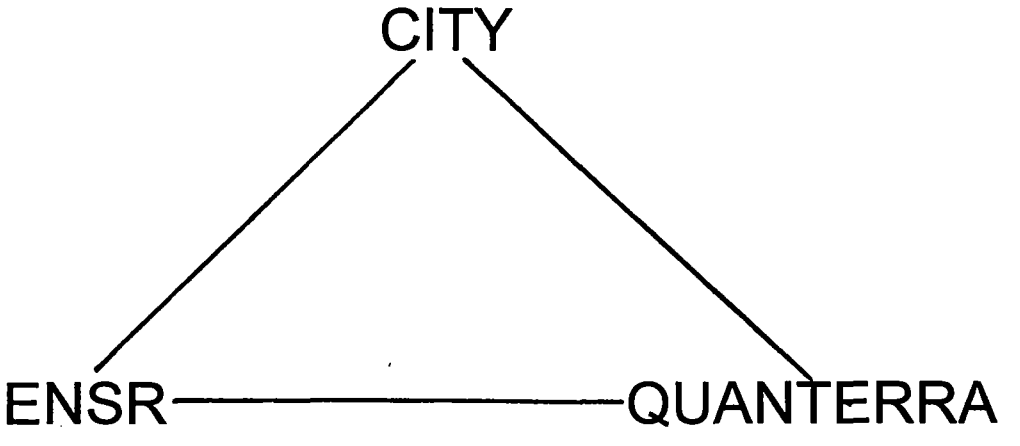
Reported By: Tom Claeys Approved By: Mary Helen Kelan

K.07
3/15/98

ANNUAL PERFORMANCE REPORT
GRANULAR ACTIVATED CARBON TREATMENT SYSTEM
FOR 1997

REILLY TAR & CHEMICAL CORP.
N.P.L. SITE
ST. LOUIS PARK, MINNESOTA

SUBMITTED MARCH 15, 1998



CITY OF ST. LOUIS PARK

UTILITY OPERATIONS

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

March 15, 1998

Regional Administrator
United States Environmental
Protection Agency, Region 5
ATTN: Darryl Owens
Mail Code 5HS-11
230 S. Dearborn Street
Chicago, Illinois 60604

Director, Groundwater and Solid
Waste Division
Minnesota Pollution Control Agency
ATTN: Site Response Section
520 Lafayette Road North
ST. Paul, Minnesota 55155

President
Reilly Industries, Inc.
300 N. Meridian #1500
Indianapolis, Indiana 46204

Commissioner
Minnesota Department of Health
121 E. Seventh Place
P.O. Box 64975
St. Paul, MN 55164-0975

RE: United States of America, et al. vs Reilly Tar &
Chemical Corporation, et al.
File No. Civ. 4-80-469
CD-RAP 4.3.5

Gentleman:

Enclosed is the 1997 annual performance report of the Granular Activated Carbon treatment system submitted pursuant to Section 4.3.5. of the Consent Decree-Remedial Action Plan in the above captioned matter. This report is issued by the City in accordance with Section 2(a) of the Reilly/St. Louis Park Agreement (Exhibit B to the Consent Decree).

Sincerely,

Scott E. Anderson
Superintendent of Utilities

enclosure
SEA/pmm
cc: William Gregg (w/ enclosures)
Tom Scott (w/o enclosures)
Reilly File
RAP/anrapgac

3752 Wooddale Avenue St. Louis Park, Minnesota 55416-5127
Phone: 612-924-2558 Fax: 612-924-2570

ANNUAL PERFORMANCE REPORT
FOR
GRANULAR ACTIVATED CARBON
TREATMENT SYSTEM - 1997

Operation:

The City operated the Granular Activated Carbon (GAC) treatment system in substantial compliance with Section 4.2 of the Remedial Action Plan (RAP) during 1997, treating 148.590 million gallons (mg) of water pumped from well SLP 10. On September 4, 1996 the treatment plant was taken off line due to the repair work on the ground reservoir. The repair work precluded the use of the ground reservoir, hence the treated water could not be added to the distribution system. The repair work on the reservoir was completed in August. To comply with the minimum pumping requirements established in Section 4.2.1 of the RAP, the minimum 10 million gallon per month volume pumped from well SLP 10 during the months of March, April, May, June and July was discharged to the surface water system.

During the months of January and February the GAC system was completely off line and no water was pumped from SLP 10 or SLP 15 due to the reconditioning project at the iron removal plant. The GAC system receives water from Water Treatment Plant No. 1, a sand filter system for iron removal located adjacent to the GAC treatment plant. The sand filter system was taken off line for major rehabilitation of the sand filters. The piping system does not allow water to be pumped directly from SLP 10 or SLP 15 to the GAC plant. Therefore the required production for SLP 10 or SLP 15 cannot be accomplished when the sand filters are off line for maintenance purposes. The major rehabilitation of the sand filters is completed once every fifteen years. The rehabilitation project is scheduled to be completed in March, 1997. The minimum annual pumpage volume for 1997 is expected to be met after the system is fully operational.

The annual monthly pumpages are shown in Table 1 which confirms the City was in substantial compliance with RAP Section 4.2.1 (i.e. a minimum of 200 mg must be pumped from SLP 10/15 annually and 10 mg must be pumped monthly).

Monitoring:

The 1997 monitoring program was jointly conducted by the City and Quanterra Environmental Services (Quanterra). The City retrieved all samples and Quanterra was responsible for analytical services. Laboratory analyses were conducted at the Quanterra laboratory in Arvada, Colorado.

The 1997 monitoring schedule (Table 2), as established in the 1997 Sampling Plan developed in accordance with the requirements of Section 3.3 of the RAP, provided for quarterly monitoring of the treatment system effluent and annual monitoring of the treatment system feed water, acid fraction analysis and extended PAH compounds. All samples were collected an analyzed in compliance with the CD-RAP. A summary of the 1997 GAC treatment system monitoring is shown in Table 3. **All monitoring results indicate the GAC treatment system operated in compliance with the Drinking Water Criteria established in CD-RAP Section 2.2.**

ADDITIONAL INFORMATION

The CD-RAP provides the operational criteria for the GAC facility located adjacent to Water Treatment Plant No. 1, located at 2936 Idaho Avenue (GAC-1) which treats water produced by municipal wells SLP 10 and SLP 15. The City constructed an additional GAC facility in 1994 located at 4701 West 41st Street (GAC-2) which treats water from municipal well SLP 4. This GAC facility is not referenced in the CD-RAP.

The City operates the GAC-2 facility within the Drinking Water Criteria established in Section 2.2. The facility is operated on a continuous pumping schedule as directed by the United States Environmental Protection Agency and the Minnesota Pollution Control Agency. The system is operated in a series of two sets of two GAC vessels. The lead units are referred to in the sample analysis as GAC-SLP4TLE. Samples are taken at the effluent of the lead vessels for operational purposes. When the sample results of the lead vessels exceed the Drinking Water Criteria the GAC is changed out. The lead vessels were changed out on May 7, 1997. After the change out the new GAC is then put in the lag position. The second set of vessels was changed out on December 5, 1997.

The results of the facility effluent are included in Table 3 of this report.

The GAC-2 facility treated 550.111 million gallons of water in 1997. The annual monthly pumpages are shown in Table 4.

CITY ST. LOUIS PARK
GRANULAR ACTIVATED CARBON
TREATMENT PLANT GAC 1

1997 PRODUCTION

	Volume Million Gallons
January	0.000
February	0.000
March	10.302
April	10.690
May	10.160
June	10.654
July	10.060
August	22.345
September	22.723
October	16.452
November	12.864
December	22.340
TOTAL ANNUAL PUMPAGE	148.590

Pumped to Surface Waters

TABLE 1

C:RAP\gac\REPGAC.XLS

1997 Sampling Plan
GAC Treatment System Monitoring Schedule

RAP Section	Sampling Points	Start of Monitoring	Sample Frequency	Analyses
4.3.1(C)	Treated Water (TRTD)	Date of plan approval	Quarterly	PAH (ppt)
4.3.3(D)	Feed Water (FEED)	Date of plan approval	Annually	PAH (ppt)
4.3.4	Treated Water	Date of plan approval	Annually	Extended PAh (ppt) ***
4.3.4	Treated or Feed Water	Date of plan approval	Annually	Acid Fraction compounds in EPA Test Method 625

*** Extended list is incorporated in the 4th quarter sample

TABLE 2

C:results96\gac\sch

GAC PLANT		SLP4T	SLP10T	SLP4T	SLP10T	SLP4T	SLP10T	SLP4T	SLP10T
DATE		2/24/97	2/24/97	5/13/97	5/13/97	8/25/97	8/25/97	10/7/97	10/7/97
2,3-Benzofuran									
2,3-Dihydroindene		11	N		N	5.2		13	14
1H-Indene		1.3	O		O				
Naphthalene			T		T				
Benzo (b) Thiophene		2.2						2.2	
1H-Indole			A		A				
2-Methylnaphthalene			V		V				
1-Methylnaphthalene			A		A				
Biphenyl			I		I				
Acenaphthylene			L		L				
Acenaphthene		9.3	A		A	5.2		12	6.5
Dibenzofuran			B	1	B				
Fluorene		0.99	L	1.2	L				2
Dibenzothiophene			E		E				
Phenanthrene		5.6		5.4		3.2	2.1	3.1	2
Anthracene			O		O				
Acridine			F		F				
Carbazole			F		F			1.9	
Fluoranthene									
Pyrene		1.7	L		L				
12-Dimethylbenz(a)anthracene		2	I		I				
Benzo (e) Pyrene			N		N				
Perylene			E		E				
3-Methylcholanthrene									
Dibenz (A,C) Anthracene									
Quinoline	C	0		0		0	0	0	0
Benzo (a) Anthracene	C	0		0		0	0	0	0
Chrysene	C	0		0		0	0	0	0
Benzo (b) Fluoranthene	C	0		0		0	0	0	0
Benzo (k) Fluoranthene	C	0		0		0	0	0	0
Benzo (a) Pyrene	C	0		0		0	0	0	0
Indino (1,2,3-cd) Pyrene	C	0		0		0	0	0	0
Dibenz (a,h) Anthracene	C	0		0		0	0	0	0
Benzo (g,h,i) Perylene	C	0		0		0	0	0	0
TOTAL OTHER PAH		34.09		7.6		13.6	2.1	32.2	24.5
BENO(a)PYRENE + DIBENZO(A,H)	**C**	0		0		0	0	0	0
TOTAL CARCINOGEN	C	0		0		0	0	0	0
TOTAL PAH		34.09		7.6		13.6	2.1	32.2	24.5
Dilution Factor		1		1		1	1	1	1
Surrogate Recoveries									
Naphthalene-d8		102		85		62	62	85	74
Fluorene-d10		98		73		33	81	44	35
Chrysene-d12		39		46		81	27	76	70

GAC PLANT	GAC	SLP4D	SLP10
DATE	FEED	4/14/97	9/23/97
2,3-Benzofuran			
2,3-Dihydroindene		200	360
1H-Indene		13	15
Naphthalene			
Benzo (b) Thiophene		62	59
1H-Indole			
2-Methylnaphthalene			
1-Methylnaphthalene			
Biphenyl			
Acenaphthylene		3.3	180
Acenaphthene		230	760
Dibenzofuran			25
Fluorene			260
Dibenzothiophene		2.3	34
Phenanthrene		8.5	15
Anthracene			
Acridine			
Carbazole		41	
Fluoranthene		20	53
Pyrene		16	98
12-Dimethylbenz(a)anthracene			
Benzo (e) Pyrene			
Perylene			
3-Methylcholanthrene			
Dibenz (A,C) Anthracene			
Quinoline		0	0
Benzo (a) Anthracene		0	0
Chrysene		0	0
Benzo (b) Fluoranthene		0	0
Benzo (k) Fluoranthene		0	0
Benzo (a) Pyrene		0	0
Indino (1,2,3-cd) Pyrene		0	0
Dibenz (a,h) Anthracene		0	0
Benzo (g,h,i) Perylene		0	0
TOTAL OTHER PAH		596.1	1859
BENO(a)PYRENE + DIBENZO(A,H)		0	0
TOTAL CARCINOGEN		0	0
TOTAL PAH		596.1	1859
Dilution Factor		2	10
Surrogate Recoveries			
Naphthalene-d8		102	7
Fluorene-d10		102	6
Chrysene-d12		40	0

CITY ST. LOUIS PARK
GRANULAR ACTIVATED CARBON
TREATMENT PLANT GAC 4

1997 PRODUCTION

	Volume Million Gallons
January	46.900
February	44.188
March	47.358
April	45.318
May	47.323
June	46.220
July	50.033
August	43.243
September	48.803
October	51.576
November	49.433
December	29.716
TOTAL ANNUAL PUMPAGE	550.111

FIRST QUARTER MONITORING

Quanterra Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

March 28, 1997

Quanterra Environmental Services

Project Number 053893

Introduction

Six aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on February 25, 1997. The samples were logged in under Quanterra Denver's project number 053893. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for low level part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1997 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

The surrogate compound naphthalene-d8 in the LCS is reported at 111% recovery which is outside the 21% to 108% acceptance criteria. All samples associated with this LCS has their surrogate recoveries within acceptable limits.

The spike compound benzo (e) pyrene in both the matrix spike and matrix spike duplicate samples had "0%" recovery. Benzo (e) pyrene was recovered within acceptable limits in the LCS. A matrix effect is indicated.

With the exception of the above, this data package is in compliance with the terms and conditions of the October 1997 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported By: Kurt C. Ill **Date:** 3/28/97

Kurt C. Ill
Program Manager

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
053893-0001-SA	GAC-SLP4T-022497	AQUEOUS	24 FEB 97		25 FEB 97
053893-0001-DU	GAC-SLP4TD-022497	AQUEOUS	24 FEB 97		25 FEB 97
053893-0001-MS	GAC-SLP4TMS-022497	AQUEOUS	24 FEB 97		25 FEB 97
053893-0001-SD	GAC-SLP4TMSD-022497	AQUEOUS	24 FEB 97		25 FEB 97
053893-0002-FB	GAC-SLP4TFB-022497	AQUEOUS	24 FEB 97		25 FEB 97
053893-0002-FD	GAC-SLP4TFBD-022497	AQUEOUS	24 FEB 97		25 FEB 97

ANALYTICAL TEST REQUESTS
for
City of St. Louis Park

Lab ID: 053893	Group Code	Analysis Description	Custom Test?
0001 - 0002,	A	Polynuclear Aromatic Hydrocarbons	N
0002		Prep - PAH Semivolatile Organics by GC/MS, 5	N

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4T

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 53893 SAS No.: SDG No.: 53893

Matrix: (soil/water) WATER Lab Sample ID: 53893-01

Sample wt/vol: 4200 (g/ml) ML Lab File ID: A0301623

Level: (low/med) LOW Date Received: 02/25/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/27/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 03/07/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	11	
95-13-6	1H-Indene	1.3	
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	2.2	
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.7	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	9.3	
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	0.99	
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	5.6	B
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.7	B
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TD

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 53893 SAS No.: SDG No.: 53893

Matrix: (soil/water) WATER Lab Sample ID: 53893-01DU

Sample wt/vol: 4200 (g/ml) ML Lab File ID: A0401624

Level: (low/med) LOW Date Received: 02/25/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/27/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 03/07/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	11	
95-13-6	1H-Indene	1.2	
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	2.2	
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.7	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	9.2	
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	0.95	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	3.9	B
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.4	B
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

EPA SAMPLE NO.

GAC-SLP4TFB

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 53893 SAS No.: SDG No.: 53893

Matrix: (soil/water) WATER Lab Sample ID: 53893-02FB

Sample wt/vol: 4200 (g/ml) ML Lab File ID: A0701627

Level: (low/med) LOW Date Received: 02/25/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/27/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 03/07/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	4.8	U
95-13-6	1H-Indene	1.3	
91-20-3	Naphthalene	7.4	
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	5.0	
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	1.4	
86-73-7	Fluorene	1.4	
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	8.5	B
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	2.5	B
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TFBD

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 53893 SAS No.: SDG No.: 53893

Matrix: (soil/water) WATER Lab Sample ID: 53893-02FD

Sample wt/vol: 4200 (g/ml) ML Lab File ID: A0801628

Level: (low/med) LOW Date Received: 02/25/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/27/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 03/07/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	4.8	U
95-13-6	1H-Indene	1.4	
91-20-3	Naphthalene	7.4	
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	5.0	
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	1.4	
86-73-7	Fluorene	1.4	
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	8.1	B
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	2.0	B
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TMS

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 53893 SAS No.: SDG No.: 53893

Matrix: (soil/water) WATER Lab Sample ID: 53893-01MS

Sample wt/vol: 4200 (g/ml) ML Lab File ID: A0501625

Level: (low/med) LOW Date Received: 02/25/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/27/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 03/07/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	9.8	
95-13-6	1H-Indene	8.8	
91-20-3	Naphthalene	11	
95-15-8	Benzo(b)thiophene	2.0	
91-22-5	Quinoline	10	
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	10	
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	8.3	
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	8.5	
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	4.8	B
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.4	B
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	3.6	
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

EPA SAMPLE NO.

GAC-SLP4TMSD

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 53893 SAS No.: SDG No.: 53893

Matrix: (soil/water) WATER Lab Sample ID: 53893-01MSD

Sample wt/vol: 4200 (g/ml) ML Lab File ID: A0601626

Level: (low/med) LOW Date Received: 02/25/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/27/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 03/07/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	11	
95-13-6	1H-Indene	9.8	
91-20-3	Naphthalene	13	
95-15-8	Benzo(b)thiophene	2.1	
91-22-5	Quinoline	11	
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	12	
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	8.7	
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	9.1	
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	4.6	B
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	3.4	
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

SECOND QUARTER MONITORING

Quanterra Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

July 8, 1997

Quanterra Environmental Services

Project Number 055164

Introduction

Seven aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on April 22, 1997. The samples were logged in under Quanterra Denver's project number 055164. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for low level part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1996 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

The surrogate compound chrysene-d12 was recovered at 122% in the method blank. Surrogate limits for chrysene-d12 are 10% to 118%. Chrysene was recovered in all associated samples and the LCS within acceptance limits. The data is not effected.

The spike compound benzo (e) pyrene was not recovered in either the matrix spike or matrix spike cuplicate samples. Benzo (e) pyrene was recovered within acceptance limits in the LCS. Matrix effect is indicated.

Except for the above, this data package is in compliance with the terms and conditions of the October 1996 QAPP, both technically and for completeness

Reported By: Kurt C. III **Date:** July 8, 1997

Kurt C. Ill
Program Manager

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
055164-0001-SA	GAC-SLP4T-051397	AQUEOUS	13 MAY 97		14 MAY 97
055164-0001-DU	GAC-SLP4TD-051397	AQUEOUS	13 MAY 97		14 MAY 97
055164-0001-MS	GAC-SLP4TMS-051397	AQUEOUS	13 MAY 97		14 MAY 97
055164-0001-SD	GAC-SLP4TMSD-051397	AQUEOUS	13 MAY 97		14 MAY 97
055164-0002-FB	GAC-SLP4TFB-051397	AQUEOUS	13 MAY 97		14 MAY 97
055164-0002-FD	GAC-SLP4TFBD-051397	AQUEOUS	13 MAY 97		14 MAY 97
055164-0003-SA	GAC-SLP4TLE-051397	AQUEOUS	13 MAY 97		14 MAY 97

Quanterra
Environmental Services

ANALYTICAL TEST REQUESTS
for
City of St. Louis Park

Lab ID: 055164	Group Code	Analysis Description	Custom Test?
0001 - 0003	A	Polynuclear Aromatic Hydrocarbons	N
		Prep - PAH Semivolatile Organics by GC/MS, 5	N
0002	B	Polynuclear Aromatic Hydrocarbons	N
		Prep - PAH Semivolatile Organics by GC/MS, 5	N

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4T

Lab Name: Contract:

Lab Code: Case No.: 55164 SAS No.: SDG No.: 55164

Matrix: (soil/water) WATER Lab Sample ID: 55164-01

Sample wt/vol: 4185 (g/ml) ML Lab File ID: C0109

Level: (low/med) LOW Date Received: 05/14/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/15/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 06/16/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	4.8	U
95-13-6	1H-Indene	0.86	U
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.7	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	1.0	
86-73-7	Fluorene	1.2	
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	5.4	
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TD

Lab Name: Contract:

Lab Code: Case No.: 55164 SAS No.: SDG No.: 55164

Matrix: (soil/water) WATER Lab Sample ID: 55164-01DU

Sample wt/vol: 4195 (g/ml) ML Lab File ID: C0121

Level: (low/med) LOW Date Received: 05/14/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/15/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 06/17/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	4.8	U
95-13-6	1H-Indene	0.86	U
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.7	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	0.95	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	4.9	
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TFB

Lab Name: Contract:

Lab Code: Case No.: 55164 SAS No.: SDG No.: 55164

Matrix: (soil/water) WATER Lab Sample ID: 55164-02FB

Sample wt/vol: 4160 (g/ml) ML Lab File ID: C0120

Level: (low/med) LOW Date Received: 05/14/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/15/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 06/17/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	4.8	U
95-13-6	1H-Indene	0.86	U
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.8	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	0.96	U
86-73-7	Fluorene	0.96	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	2.3	
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.9	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.4	
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TFBD

Lab Name: Contract:

Lab Code: Case No.: 55164 SAS No.: SDG No.: 55164

Matrix: (soil/water) WATER Lab Sample ID: 55164-02FD

Sample wt/vol: 4165 (g/ml) ML Lab File ID: C0111

Level: (low/med) LOW Date Received: 05/14/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/15/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 06/16/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	4.8	U
95-13-6	1H-Indene	0.86	U
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.7	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	0.96	U
86-73-7	Fluorene	0.96	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	3.0	
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TLE

Lab Name: Contract:

Lab Code: Case No.: 55164 SAS No.: SDG No.: 55164

Matrix: (soil/water) WATER Lab Sample ID: 55164-03

Sample wt/vol: 4190 (g/ml) ML Lab File ID: C0116

Level: (low/med) LOW Date Received: 05/14/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/15/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 06/16/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	56	
95-13-6	1H-Indene	2.8	
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	12	
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.7	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	44	
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	0.95	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	3.5	
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	4.7	
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.7	
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TMS

Lab Name: Contract:

Lab Code: Case No.: 55164 SAS No.: SDG No.: 55164

Matrix: (soil/water) WATER Lab Sample ID: 55164-01MS

Sample wt/vol: 4195 (g/ml) ML Lab File ID: C0114

Level: (low/med) LOW Date Received: 05/14/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/15/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 06/16/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	4.8	U
95-13-6	1H-Indene	8.3	
91-20-3	Naphthalene	10	
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	8.5	
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	9.3	
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	9.1	
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	3.1	
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	4.2	
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TMSD

Lab Name: Contract:

Lab Code: Case No.: 55164 SAS No.: SDG No.: 55164

Matrix: (soil/water) WATER Lab Sample ID: 55164-01SD

Sample wt/vol: 4195 (g/ml) ML Lab File ID: C0122

Level: (low/med) LOW Date Received: 05/14/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/15/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 06/17/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	4.8	U
95-13-6	1H-Indene	7.7	
91-20-3	Naphthalene	11	
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	7.9	
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	9.5	
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	9.6	
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	3.8	
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	4.0	
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: 55164 SAS No.: SDG No.: 55164

	EPA SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	LCS	84	114	72						0
02	GAC-SLP4T	85	46	73						0
03	GAC-SLP4TFBD	88	98	75						0
04	GAC-SLP4TMS	79	85	67						0
05	GAC-SLP4TLE	83	60	69						0
06	SBLK01	82	122*	68						0
07	GAC-SLP4TFB	77	110	67						0
08	GAC-SLP4TD	77	90	71						0
09	GAC-SLP4TMSD	92	92	77						0
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

		QC LIMITS
S1	= Naphthalene-d8	(21-108)
S2	= Chrysene-d12	(10-118)
S3	= Fluorene-d10	(41-162)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

THIRD QUARTER MONITORING

Quanterra Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

October 3, 1997

Quanterra Environmental Services

Project Number 056651

Introduction

Nine aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on August 26, 1997. The samples were logged in under Quanterra Denver's project number 056651. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for low level part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1996 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

The spike compounds benzo (e) pyrene and crysene were not recovered in either the matrix spike or matrix spike duplicate samples. Benzo (e) pyrene and crysene were recovered within acceptance limits in the LCS. A matrix effect is indicated.

Quanterra
Environmental Services

Except for the above, this data package is in compliance with the terms and conditions of the October 1996 QAPP, both technically and for completeness

Reported By: Kurt C. Ill **Date:** Oct. 3, 1997

Kurt C. Ill
Program Manager

Quanterra
Environmental
Services

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
056651-0001-SA	GAC-SLP4T-082597	AQUEOUS	25 AUG 97		26 AUG 97
056651-0001-DU	GAC-SLP4TD-082597	AQUEOUS	25 AUG 97		26 AUG 97
056651-0001-MS	GAC-SLP4TMS-082597	AQUEOUS	25 AUG 97		26 AUG 97
056651-0001-SD	GAC-SLP4TMSD-082597	AQUEOUS	25 AUG 97		26 AUG 97
056651-0002-SA	GAC-SLP4TLE-082597	AQUEOUS	25 AUG 97		26 AUG 97
056651-0003-SA	GAC-SLP10T-082597	AQUEOUS	25 AUG 97		26 AUG 97
056651-0004-FB	GAC-SLP4TFB-082597	AQUEOUS	25 AUG 97		26 AUG 97
056651-0004-FD	GAC-SLP4TFBD-082597	AQUEOUS	25 AUG 97		26 AUG 97
056651-0005-SA	GAC-SLP6-082597	AQUEOUS	25 AUG 97		26 AUG 97

Quanterra
Environmental
Services

ANALYTICAL TEST REQUESTS
for
City of St. Louis Park

Lab ID: 056651	Group Code	Analysis Description	Custom Test?
0001 - 0005	A	Polynuclear Aromatic Hydrocarbons	N
		Prep - PAH Semivolatile Organics by GC/MS, 5	N
0004	B	Polynuclear Aromatic Hydrocarbons	N
		Prep - PAH Semivolatile Organics by GC/MS, 5	N

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4T

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 56651 SAS No.: SDG No.: 56651

Matrix: (soil/water) WATER Lab Sample ID: 56651-01

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C0452

Level: (low/med) LOW Date Received: 08/26/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:08/26/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 09/03/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	5.2	
95-13-6	1H-Indene	0.86	U
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.7	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	5.2	
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	0.95	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	3.2	B
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TD

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 56651 SAS No.: SDG No.: 56651

Matrix: (soil/water) WATER Lab Sample ID: 56651-01DU

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C0453

Level: (low/med) LOW Date Received: 08/26/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:08/26/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 09/03/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	5.0	
95-13-6	1H-Indene	0.86	U
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.7	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	5.1	
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	0.95	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	2.6	B
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TLE

Name: QUANTERRA DENVER Contract:

Code: Case No.: 56651 SAS No.: SDG No.: 56651

Matrix: (soil/water) WATER Lab Sample ID: 56651-02

Sample wt/vol: 4185 (g/ml) ML Lab File ID: C0456

Level: (low/med) LOW Date Received: 08/26/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:08/26/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 09/03/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	89	
95-13-6	1H-Indene	5.2	
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	21	
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.9	
91-57-6	2-Methylnaphthalene	3.7	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	110	
132-64-9	Dibenzofuran	0.96	U
86-73-7	Fluorene	0.96	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	3.1	B
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	16	
206-44-0	Fluoranthene	10	
129-00-0	Pyrene	7.9	
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP10T

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 56651 SAS No.: SDG No.: 56651

Matrix: (soil/water) WATER Lab Sample ID: 56651-03

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C0457

Level: (low/med) LOW Date Received: 08/26/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:08/26/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 09/03/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	4.8	U
95-13-6	1H-Indene	0.86	U
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.7	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	0.95	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	2.1	B
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TFB

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 56651 SAS No.: SDG No.: 56651

Matrix: (soil/water) WATER Lab Sample ID: 56651-04FB

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C0450

Level: (low/med) LOW Date Received: 08/26/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:08/26/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 09/03/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	4.8	U
95-13-6	1H-Indene	0.86	U
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.7	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	0.95	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	1.6	B
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TFBD

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 56651 SAS No.: SDG No.: 56651

Matrix: (soil/water) WATER Lab Sample ID: 56651-04FD

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C0451

Level: (low/med) LOW Date Received: 08/26/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:08/26/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 09/03/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	4.8	U
95-13-6	1H-Indene	0.86	U
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.7	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	0.95	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	1.5	B
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TMS

I Name: QUANTERRA DENVER Contract:

L Code: Case No.: 56651 SAS No.: SDG No.: 56651

Matrix: (soil/water) WATER Lab Sample ID: 56651-01MS

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C0454

Level: (low/med) LOW Date Received: 08/26/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:08/26/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 09/03/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	4.8	U
95-13-6	1H-Indene	6.6	
91-20-3	Naphthalene	8.0	
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	7.2	
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	8.7	
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	4.7	
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	9.3	
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	2.7	B
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TMSD

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 56651 SAS No.: SDG No.: 56651

Matrix: (soil/water) WATER Lab Sample ID: 56651-01SD

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C0455

Level: (low/med) LOW Date Received: 08/26/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:08/26/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 09/03/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	5.0	
95-13-6	1H-Indene	7.4	
91-20-3	Naphthalene	8.8	
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	8.1	
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	9.8	
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	5.4	
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	10	
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	3.2	B
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

FOURTH QUARTER MONITORING

Quanterra Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

December 17, 1997

Quanterra Environmental Services

Project Number 057409

Introduction

Seven aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on October 8, 1997. The samples were logged in under Quanterra Denver's project number 057409. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for low level part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH) extended list.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1996 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

Fluorene was recovered at 120% in the Laboratory Control Sample (LCS) which is outside the 69% to 118% acceptance limits. Fluorene was recovered within acceptance limits for the matrix spike and matrix spike duplicate samples.

The relative percent difference (RPD) for the spike compounds quinoline and crysene are reported outside the 20% QC limits. All spike recoveries were within acceptance limits. Quinoline and chrysene were recovered within acceptance limits for the LCS.

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The spike compound benzo (e) pyrene was recovered low in both the matrix spike and matrix spike duplicate sample. Benzo (e) pyrene was recovered within acceptance limits in the LCS. A matrix effect is indicated.

Except for the above, this data package is in compliance with the terms and conditions of the October 1996 QAPP, both technically and for completeness

Reported By: Kurt C. Ill **Date:** 12-17-97

Kurt C. Ill
Program Manager

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
057409-0001-SA	GAC-SLP4TX-100797	GRND-H2O	07 OCT 97		08 OCT 97
057409-0001-DU	GAC-SLP4TDEX-100797	GRND-H2O	07 OCT 97		08 OCT 97
057409-0001-MS	GAC-SLP4TMSEX-100797	GRND-H2O	07 OCT 97		08 OCT 97
057409-0001-SD	GAC-SLP4TMSDEX-100797	GRND-H2O	07 OCT 97		08 OCT 97
057409-0001-FB	GAC-SLP4TFBEX-1007977	GRND-H2O	07 OCT 97		08 OCT 97
057409-0001-FD	GAC-SLP4TFBDEX-100797	GRND-H2O	07 OCT 97		08 OCT 97
057409-0002-SA	GAC-SLP10TEX-100797	GRND-H2O	07 OCT 97		09 OCT 97

Quanterra
Environmental Services

ANALYTICAL TEST REQUESTS
for
City of St. Louis Park

Lab ID: 057409	Group Code	Analysis Description	Custom Test?
0001 , 0001, 0002	A	Polynuclear Aromatic Hydrocarbons - Extended List	N
		Prep - PAH Semivolatile Organics by GC/MS, 5	N
0001	B	Polynuclear Aromatic Hydrocarbons - Extended List	N
		Prep - PAH Semivolatile Organics by GC/MS, 5	N

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
GAC-SLP4TX

Lab Name: QUANTERRA Contract:

Lab Code: Case No.: 57409 SAS No.: SDG No.: 57409

Matrix: (soil/water) WATER Lab Sample ID: 57409-01

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C1073

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/07/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/11/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	13	
95-13-6	1H-Indene	0.86	U
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	2.2	
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.7	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	12	
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	0.95	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	3.1	
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.9	
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TX

Lab Name: QUANTERRA Contract:

Lab Code: Case No.: 57409 SAS No.: SDG No.: 57409

Matrix: (soil/water) WATER Lab Sample ID: 57409-01

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C1073

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/07/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/11/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
57-97-6	7,12-Dimethylbenz(a)anthrace	2.7	U
56-49-5	3-Methylcholanthrene	3.3	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TDEX

Lab Name: QUANTERRA Contract:

Lab Code: Case No.: 57409 SAS No.: SDG No.: 57409

Matrix: (soil/water) WATER Lab Sample ID: 57409-01DU

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C1075

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/07/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/11/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	11	
95-13-6	1H-Indene	0.86	U
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	1.8	
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.7	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	11	
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	0.95	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	3.2	
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.4	
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TDEX

Lab Name: QUANTERRA Contract:

Lab Code: Case No.: 57409 SAS No.: SDG No.: 57409

Matrix: (soil/water) WATER Lab Sample ID: 57409-01DU

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C1075

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/07/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/11/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
57-97-6	7,12-Dimethylbenz(a)anthrace	2.7	U
56-49-5	3-Methylcholanthrene	3.3	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
GAC-SLP4TFBEX

Lab Name: QUANTERRA Contract:

Lab Code: Case No.: 57409 SAS No.: SDG No.: 57409

Matrix: (soil/water) WATER Lab Sample ID: 57409-01FB

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C1066

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/09/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/11/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	4.8	U
95-13-6	1H-Indene	0.86	U
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.7	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	0.95	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	1.9	
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
GAC-SLP4TFBEX

Lab Name: QUANTERRA Contract:

Lab Code: Case No.: 57409 SAS No.: SDG No.: 57409

Matrix: (soil/water) WATER Lab Sample ID: 57409-01FB

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C1066

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/09/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/11/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
57-97-6	7,12-Dimethylbenz(a)anthrace	2.7	U
56-49-5	3-Methylcholanthrene	3.3	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
GAC-SLP4TFBDEX

Lab Name: QUANTERRA Contract:

Lab Code: Case No.: 57409 SAS No.: SDG No.: 57409

Matrix: (soil/water) WATER Lab Sample ID: 57409-01FD

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C1067

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/09/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/11/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	4.8	U
95-13-6	1H-Indene	0.86	U
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.7	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	0.95	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	2.2	
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TFBDEX

Lab Name: QUANTERRA Contract:

Lab Code: Case No.: 57409 SAS No.: SDG No.: 57409

Matrix: (soil/water) WATER Lab Sample ID: 57409-01FD

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C1067

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/09/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/11/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
57-97-6	7,12-Dimethylbenz(a)anthrace	2.7	U
56-49-5	3-Methylcholanthrene	3.3	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
GAC-SLP10TEX

Lab Name: QUANTERRA Contract:

Lab Code: Case No.: 57409 SAS No.: SDG No.: 57409

Matrix: (soil/water) WATER Lab Sample ID: 57409-02

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C1074

Level: (low/med) LOW Date Received: 10/09/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/07/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/11/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	14	
95-13-6	1H-Indene	0.86	U
91-20-3	Naphthalene	6.2	U
95-15-8	Benzo(b)thiophene	0.86	U
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.7	U
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	6.5	
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	2.0	
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	2.0	
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP10TEX

Lab Name: QUANTERRA Contract:

Lab Code: Case No.: 57409 SAS No.: SDG No.: 57409

Matrix: (soil/water) WATER Lab Sample ID: 57409-02

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C1074

Level: (low/med) LOW Date Received: 10/09/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/07/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/11/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
57-97-6	7,12-Dimethylbenz(a)anthrace	2.7	U
56-49-5	3-Methylcholanthrene	3.3	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
GAC-SLP4TMSEX

Lab Name: QUANTERRA Contract:

Lab Code: Case No.: 57409 SAS No.: SDG No.: 57409

Matrix: (soil/water) WATER Lab Sample ID: 57409-01MS

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C1076

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/07/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/11/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	12	
95-13-6	1H-Indene	9.6	
91-20-3	Naphthalene	12	
95-15-8	Benzo(b)thiophene	2.1	
91-22-5	Quinoline	8.5	
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	11	
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	12	
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	10	
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	3.2	
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.6	
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	4.6	
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TMSEX

Lab Name: QUANTERRA Contract:

Lab Code: Case No.: 57409 SAS No.: SDG No.: 57409

Matrix: (soil/water) WATER Lab Sample ID: 57409-01MS

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C1076

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/07/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/11/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
57-97-6	7,12-Dimethylbenz(a)anthrace	2.7	U
56-49-5	3-Methylcholanthrene	3.3	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TMSDEX

Lab Name: QUANTERRA Contract:

Lab Code: Case No.: 57409 SAS No.: SDG No.: 57409

Matrix: (soil/water) WATER Lab Sample ID: 57409-01SD

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C1077

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/07/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/11/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	12	
95-13-6	1H-Indene	9.5	
91-20-3	Naphthalene	10	
95-15-8	Benzo(b)thiophene	2.0	
91-22-5	Quinoline	6.6	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	9.2	
90-12-0	1-Methylnaphthalene	2.7	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	12	
132-64-9	Dibenzofuran	0.95	U
86-73-7	Fluorene	9.8	
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	2.9	
120-12-7	Anthracene	2.6	U
260-94-6	Acridine	5.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.0	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(a)Anthracene	2.4	U
218-01-9	Chrysene	3.7	
207-08-9	Benzo(b)fluoranthene	2.4	U
205-08-9	Benzo(k)fluoranthene	2.2	U
192-97-2	Benzo(e)pyrene	1.8	U
50-32-8	Benzo(a)pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	1.5	U
191-24-2	Benzo(g,h,i)perylene	2.7	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GAC-SLP4TMSDEX

Lab Name: QUANTERRA Contract:

Lab Code: Case No.: 57409 SAS No.: SDG No.: 57409

Matrix: (soil/water) WATER Lab Sample ID: 57409-01SD

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C1077

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/07/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/11/97

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
57-97-6	7,12-Dimethylbenz(a)anthrace	2.7	U
56-49-5	3-Methylcholanthrene	3.3	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: PCJ-SLP10 GAC - FEED

Lab Name: QUANTERRA Contract:

Lab Code: Case No.: 57147 SAS No.: SDG No.: 57147

Matrix: (soil/water) WATER Lab Sample ID: 57147-08

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C0900

Level: (low/med) LOW Date Received: 09/24/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:09/25/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 10/31/97

Injection Volume: 1.0(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	48	U
496-11-7	2,3-Dihydroindene	360	
95-13-6	1H-Indene	15	
91-20-3	Naphthalene	62	U
95-15-8	Benzo(b)thiophene	59	
91-22-5	Quinoline	66	U
120-72-9	1H-Indole	24	U
91-57-6	2-Methylnaphthalene	37	U
90-12-0	1-Methylnaphthalene	27	U
92-52-4	Biphenyl	41	U
208-96-8	Acenaphthylene	180	
83-32-9	Acenaphthene	760	
132-64-9	Dibenzofuran	25	
86-73-7	Fluorene	260	
132-65-0	Dibenzothiophene	34	
85-01-8	Phenanthrene	15	B
120-12-7	Anthracene	26	U
260-94-6	Acridine	58	U
86-74-8	Carbazole	18	U
206-44-0	Fluoranthene	53	
129-00-0	Pyrene	98	
56-55-3	Benzo(a)Anthracene	24	U
218-01-9	Chrysene	27	U
207-08-9	Benzo(b)fluoranthene	24	U
205-08-9	Benzo(k)fluoranthene	22	U
192-97-2	Benzo(e)pyrene	18	U
50-32-8	Benzo(a)pyrene	22	U
198-55-0	Perylene	24	U
193-39-5	Indeno(1,2,3-cd)pyrene	20	U
53-70-3	Dibenzo(a,h)anthracene	15	U
191-24-2	Benzo(g,h,i)perylene	27	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PCJ-SLP4
GAC - FEED

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 54628 SAS No.: SDG No.: 54628

Matrix: (soil/water) WATER Lab Sample ID: 54628-01

Sample wt/vol: 4200 (g/ml) ML Lab File ID: A0601867

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/15/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 05/06/97

Injection Volume: 1.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) NG/L	Q
271-89-6	2,3-Benzofuran	9.7	U
496-11-7	2,3-Dihydroindene	190	
95-13-6	1H-Indene	12	B
91-20-3	Naphthalene	12	U
95-15-8	Benzo(b)thiophene	58	B
91-22-5	Quinoline	13	U
120-72-9	1H-Indole	4.8	U
91-57-6	2-Methylnaphthalene	7.4	U
90-12-0	1-Methylnaphthalene	5.3	U
92-52-4	Biphenyl	8.2	U
208-96-8	Acenaphthylene	2.8	
83-32-9	Acenaphthene	220	
132-64-9	Dibenzofuran	1.9	U
86-73-7	Fluorene	1.9	U
132-65-0	Dibenzothiophene	2.3	
85-01-8	Phenanthrene	7.9	B
120-12-7	Anthracene	5.1	U
260-94-6	Acridine	12	U
86-74-8	Carbazole	37	
206-44-0	Fluoranthene	19	
129-00-0	Pyrene	15	B
56-55-3	Benzo(a)Anthracene	4.8	U
218-01-9	Chrysene	5.3	U
207-08-9	Benzo(b)fluoranthene	4.8	U
205-08-9	Benzo(k)fluoranthene	4.4	U
192-97-2	Benzo(e)pyrene	3.6	U
50-32-8	Benzo(a)pyrene	4.4	U
198-55-0	Perylene	4.8	U
193-39-5	Indeno(1,2,3-cd)pyrene	4.0	U
53-70-3	Dibenzo(a,h)anthracene	3.0	U
191-24-2	Benzo(g,h,i)perylene	5.3	U

Quanterra Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

December 17, 1997

Quanterra Environmental Services

Project Number 057392

Introduction

Seven aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on October 8, 1997. The samples were logged in under Quanterra Denver's project number 057392. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for Acid Fraction only by method 8270.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1996 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

The surrogate compounds phenol-d5, 2-fluorophenol, 2-chlorophenol-d4 and 1,2-dichlorobenzene-d4 were recovered low outside QC limits in the Field Blank sample. The Field Blank Duplicate sample was analyzed with all surrogates in control. Both sets of data are reported.

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Except for the above, this data package is in compliance with the terms and conditions of the October 1996 QAPP, both technically and for completeness

Reported By: Kurt C. Ill **Date:** 12-17-97

Kurt C. Ill
Program Manager

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
057392-0001-SA	GAC-SLP4TAF-100797	AQUEOUS	07 OCT 97		08 OCT 97
057392-0001-DU	GAC-SLP4TDAF-100797	AQUEOUS	07 OCT 97		08 OCT 97
057392-0001-MS	GAC-SLP4TMSAF-100797	AQUEOUS	07 OCT 97		08 OCT 97
057392-0001-SD	GAC-SLP4TMSDAF-100797	AQUEOUS	07 OCT 97		08 OCT 97
057392-0002-FB	GAC-SLP4TFBAF-100797	AQUEOUS	07 OCT 97		08 OCT 97
057392-0002-FD	GAC-SLP4TFBDAF-100797	AQUEOUS	07 OCT 97		08 OCT 97
057392-0003-SA	GAC-SLP10TAF-100797	AQUEOUS	07 OCT 97		08 OCT 97

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Quanterra
Environmental Services

ANALYTICAL TEST REQUESTS
for
City of St. Louis Park

Lab ID: 057392	Group Code	Analysis Description	Custom Test?
0001 - 0003	A	TCL Acid Organics for City of St. Louis Park	N
		Prep - Acid Organics by GC/MS	N
0002	B	TCL Acid Organics for City of St. Louis Park	N
		Prep - Acid Organics by GC/MS	N

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: SLP4TAF

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 57392 SAS No.: SDG No.: 57392

Matrix: (soil/water) WATER Lab Sample ID: 57392-01

Sample wt/vol: 1054 (g/ml) ML Lab File ID: E6405

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/13/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/19/97

Injection Volume: 2.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	9	U
95-57-8	2-Chlorophenol	9	U
95-48-7	2-Methylphenol	9	U
106-44-5	4-Methylphenol	9	U
88-75-5	2-Nitrophenol	9	U
105-67-9	2 4-Dimethylphenol	9	U
120-83-2	2 4-Dichlorophenol	9	U
59-50-7	4-Chloro-3-Methylphenol	9	U
88-06-2	2 4 6-Trichlorphenol	9	U
95-95-4	2 4 5-Trichlorophenol	47	U
51-28-5	2 4-Dinitrophenol	47	U
100-02-7	4-Nitrophenol	47	U
534-52-1	4 6-Dinitro-2-methylphenol	47	U
87-86-5	Pentachlorophenol	47	U
65-85-0	Benzoic Acid	47	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SLP4TDAF

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 57392 SAS No.: SDG No.: 57392

Matrix: (soil/water) WATER Lab Sample ID: 57392-01DU

Sample wt/vol: 1060 (g/ml) ML Lab File ID: E6406

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/13/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/19/97

Injection Volume: 2.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	9	U
95-57-8	2-Chlorophenol	9	U
95-48-7	2-Methylphenol	9	U
106-44-5	4-Methylphenol	9	U
88-75-5	2-Nitrophenol	9	U
105-67-9	2 4-Dimethylphenol	9	U
120-83-2	2 4-Dichlorophenol	9	U
59-50-7	4-Chloro-3-Methylphenol	9	U
88-06-2	2 4 6-Trichlorphenol	9	U
95-95-4	2 4 5-Trichlorophenol	47	U
51-28-5	2 4-Dinitrophenol	47	U
100-02-7	4-Nitrophenol	47	U
534-52-1	4 6-Dinitro-2-methylphenol	47	U
87-86-5	Pentachlorophenol	47	U
65-85-0	Benzoic Acid	47	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SLP4TFBAF

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 57392 SAS No.: SDG No.: 57392

Matrix: (soil/water) WATER Lab Sample ID: 57392-02FB

Sample wt/vol: 1054 (g/ml) ML Lab File ID: E6409

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/13/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/20/97

Injection Volume: 2.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	9	U
95-57-8	2-Chlorophenol	9	U
95-48-7	2-Methylphenol	9	U
106-44-5	4-Methylphenol	9	U
88-75-5	2-Nitrophenol	9	U
105-67-9	2 4-Dimethylphenol	9	U
120-83-2	2 4-Dichlorophenol	9	U
59-50-7	4-Chloro-3-Methylphenol	9	U
88-06-2	2 4 6-Trichlorphenol	9	U
95-95-4	2 4 5-Trichlorophenol	47	U
51-28-5	2 4-Dinitrophenol	47	U
100-02-7	4-Nitrophenol	47	U
534-52-1	4 6-Dinitro-2-methylphenol	47	U
87-86-5	Pentachlorophenol	47	U
65-85-0	Benzoic Acid	47	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

LAB SAMPLE NO.: SLP4TFBDAF

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 57392 SAS No.: SDG No.: 57392

Matrix: (soil/water) WATER Lab Sample ID: 57392-02FD

Sample wt/vol: 1058 (g/ml) ML Lab File ID: E6410

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/13/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/20/97

Injection Volume: 2.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	9	U
95-57-8	2-Chlorophenol	9	U
95-48-7	2-Methylphenol	9	U
106-44-5	4-Methylphenol	9	U
88-75-5	2-Nitrophenol	9	U
105-67-9	2 4-Dimethylphenol	9	U
120-83-2	2 4-Dichlorophenol	9	U
59-50-7	4-Chloro-3-Methylphenol	9	U
88-06-2	2 4 6-Trichlorphenol	9	U
95-95-4	2 4 5-Trichlorophenol	47	U
51-28-5	2 4-Dinitrophenol	47	U
100-02-7	4-Nitrophenol	47	U
534-52-1	4 6-Dinitro-2-methylphenol	47	U
87-86-5	Pentachlorophenol	47	U
65-85-0	Benzoic Acid	47	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SLP10TAF

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 57392 SAS No.: SDG No.: 57392

Matrix: (soil/water) WATER Lab Sample ID: 57392-03

Sample wt/vol: 1055 (g/ml) ML Lab File ID: E6411

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/13/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/20/97

Injection Volume: 2.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	9	U
95-57-8	2-Chlorophenol	9	U
95-48-7	2-Methylphenol	9	U
106-44-5	4-Methylphenol	9	U
88-75-5	2-Nitrophenol	9	U
105-67-9	2 4-Dimethylphenol	9	U
120-83-2	2 4-Dichlorophenol	9	U
59-50-7	4-Chloro-3-Methylphenol	9	U
88-06-2	2 4 6-Trichlorphenol	9	U
95-95-4	2 4 5-Trichlorophenol	47	U
51-28-5	2 4-Dinitrophenol	47	U
100-02-7	4-Nitrophenol	47	U
534-52-1	4 6-Dinitro-2-methylphenol	47	U
87-86-5	Pentachlorophenol	47	U
65-85-0	Benzoic Acid	47	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SLP4TMSAF

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 57392 SAS No.: SDG No.: 57392

Matrix: (soil/water) WATER Lab Sample ID: 57392-01MS

Sample wt/vol: 1057 (g/ml) ML Lab File ID: E6407

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/13/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/19/97

Injection Volume: 2.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	50	
95-57-8	2-Chlorophenol	53	
95-48-7	2-Methylphenol	9	U
106-44-5	4-Methylphenol	9	U
88-75-5	2-Nitrophenol	9	U
105-67-9	2 4-Dimethylphenol	9	U
120-83-2	2 4-Dichlorophenol	9	U
59-50-7	4-Chloro-3-Methylphenol	56	
88-06-2	2 4 6-Trichlorphenol	9	U
95-95-4	2 4 5-Trichlorophenol	47	U
51-28-5	2 4-Dinitrophenol	47	U
100-02-7	4-Nitrophenol	64	
534-52-1	4 6-Dinitro-2-methylphenol	47	U
87-86-5	Pentachlorophenol	60	
65-85-0	Benzoic Acid	47	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SLP4TMSDAF

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 57392 SAS No.: SDG No.: 57392

Matrix: (soil/water) WATER Lab Sample ID: 57392-01SD

Sample wt/vol: 1057 (g/ml) ML Lab File ID: E6408

Level: (low/med) LOW Date Received: 10/08/97

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/13/97

Concentrated Extract Volume: 0.5(ml) Date Analyzed: 11/19/97

Injection Volume: 2.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	54	
95-57-8	2-Chlorophenol	59	
95-48-7	2-Methylphenol	9	U
106-44-5	4-Methylphenol	9	U
88-75-5	2-Nitrophenol	9	U
105-67-9	2 4-Dimethylphenol	9	U
120-83-2	2 4-Dichlorophenol	9	U
59-50-7	4-Chloro-3-Methylphenol	62	
88-06-2	2 4 6-Trichlorphenol	9	U
95-95-4	2 4 5-Trichlorophenol	47	U
51-28-5	2 4-Dinitrophenol	47	U
100-02-7	4-Nitrophenol	74	
534-52-1	4 6-Dinitro-2-methylphenol	47	U
87-86-5	Pentachlorophenol	66	
65-85-0	Benzoic Acid	47	U